

6.0 NINE-FACTOR ANALYSES OF INDIVIDUAL NONATTAINMENT AREAS

Chapter 6 contains the rationale for EPA's PM_{2.5} designations sorted by EPA Region.

The first section under each Region contains the 9-Factor Analyses for any nonattainment areas that was sent in the 120 day letters from EPA to the states and tribes. These letters, sent on June 28 and 29, 2004 responded to the states and tribes recommendations for areas meeting and not meeting the PM_{2.5} NAAQS. The second section contains justifications for any modifications made to the intended designations found in the 120 day letters.

6.1 Region 1 Nonattainment Areas

6.1.1 EPA 9-Factor Analyses for Southern New England for the Designation of PM_{2.5} Nonattainment Areas

The following is a 9-factor analysis for New England counties that are candidates for nonattainment status for the PM_{2.5} air-quality standard. EPA guidance establishes the metropolitan area (i.e., MSA or C/MSA where one exists) as the presumptive boundary for PM_{2.5} nonattainment areas. (See memo from Jeffrey R. Holmstead to EPA Regional Administrators, April 1, 2003). OMB issued revised urban-area definitions on June 6, 2003. Although states were not asked to use the 2003 urban-area definitions when recommending PM_{2.5} nonattainment areas to EPA, EPA is using the 2003 definitions in its review of state recommendations. Therefore, this 9-factor analysis considers all counties in New England that are in the 2003 New York-Newark-Bridgeport, NY-NJ-CT CSA, and any counties in New England that are adjacent to this CSA. (A list of the 2003 metropolitan area definitions is available at:

www.census.gov/population/www/estimates/metroarea.html).

In New England, the New York-Newark-Bridgeport, NY-NJ-CT-PA CSA counties include Fairfield, New Haven, and Litchfield counties in CT. Adjacent counties to the CSA include Middlesex and Hartford counties in CT, and Berkshire and Hampden counties in MA. The only monitor in the New England portion of this CSA that violated the annual PM_{2.5} standard based on 2001-2003 data is located in New Haven, CT. Additionally, there are no monitors in the adjacent counties that violated the annual PM_{2.5} standard. However, the absence of a violating monitor does not automatically disqualify a county from a PM_{2.5} nonattainment designation.

Connecticut recommended that the entire state be designated as attainment based on an argument that the violating monitor is a "hot spot" (letter from CT DEP to EPA, February 10, 2004). As an alternative, if EPA does not accept the "hot spot" analysis, CT recommended a nonattainment designation for a limited geographic area, such as the City of New Haven or New Haven County. In addition, CT recommended that all CT counties should be excluded from the nonattainment area associated with the New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA based on an argument that

Connecticut does not significantly contribute to PM_{2.5} violations in the New York City metropolitan area.

The Massachusetts Department of Environmental Protection (MA DEP) recommended that all of Massachusetts be designated as attainment/unclassifiable for PM_{2.5} based on air quality data measured at the monitors within the state (letter from MA DEP to EPA, February 13, 2004). This designation is appropriate for areas where monitors have insufficient data, but where available data support attainment of standards.

Based on EPA's 9-factor analysis, EPA proposes that Fairfield and New Haven Counties in Connecticut be considered for a designation of nonattainment of PM_{2.5} air-quality standard as part of the New York City nonattainment area.

NY-NJ-CT-PA CMSA Area	State Recommended Nonattainment Counties	EPA Proposed Nonattainment Counties
Connecticut	None	New Haven County Fairfield County
Massachusetts	None	None

The following is a brief summary of the 9-factor analysis for the New England portion of the New York-N. New Jersey-Long Island, NY-NJ-CT-PA Area.

Factor 1: Emissions

For this factor, EPA looked at primary PM_{2.5}, SO₂, NO_x, carbon, and crustal PM_{2.5} emissions. The weighted emissions score serves as an indicator of the local PM_{2.5} contribution. The emissions score (also called “composite” or “cumulative” emissions score) was derived as follows:

$$\begin{aligned}
 \text{Emissions score} = & [(\text{county SO}_2 \text{ tons/ CSA SO}_2 \text{ tons}) * (\% \text{ sulfate of urban excess PM}_{2.5})] \\
 & + [(\text{county NO}_x \text{ tons/ CSA NO}_x \text{ tons}) * (\% \text{ nitrate of urban excess PM}_{2.5})] \\
 & + [(\text{county carbon tons/ CSA carbon tons}) * (\% \text{ carbon of urban excess PM}_{2.5})] \\
 & + [(\text{county crustal PM tons/ CSA crustal PM tons}) * (\% \text{ crustal of urban excess PM}_{2.5})]
 \end{aligned}$$

For the NY-NJ-CT-PA CSA, “urban excess” was estimated using data from speciation monitors in Newark, NJ (urban site) and in Brigantine National Wildlife Refuge, NJ (regional site) for the period from April 2002 to March 2003. For the Newark speciation monitor, the total PM mass for this period was 17.5 $\mu\text{g}/\text{m}^3$; for the Brigantine IMPROVE monitor, the total PM mass was 10.9 $\mu\text{g}/\text{m}^3$. Therefore, the urban excess was estimated to be 6.6 $\mu\text{g}/\text{m}^3$, composed of 6% SO₂, 25% NO_x, 67% carbon, and 3% crustal material.

The table below shows total emissions (in tons) and emissions scores for counties that are included in the NY-NJ-CT-PA CSA and for those that are adjacent to the CSA. The counties that are in the 2003-defined CSA are in bold; other counties are adjacent to the CSA counties. (Data source: 2001 NEI). Following this table is a histogram showing

total 2001 emissions of NO_x and carbon, the major “local” PM_{2.5} components for the CSA counties and adjacent counties.

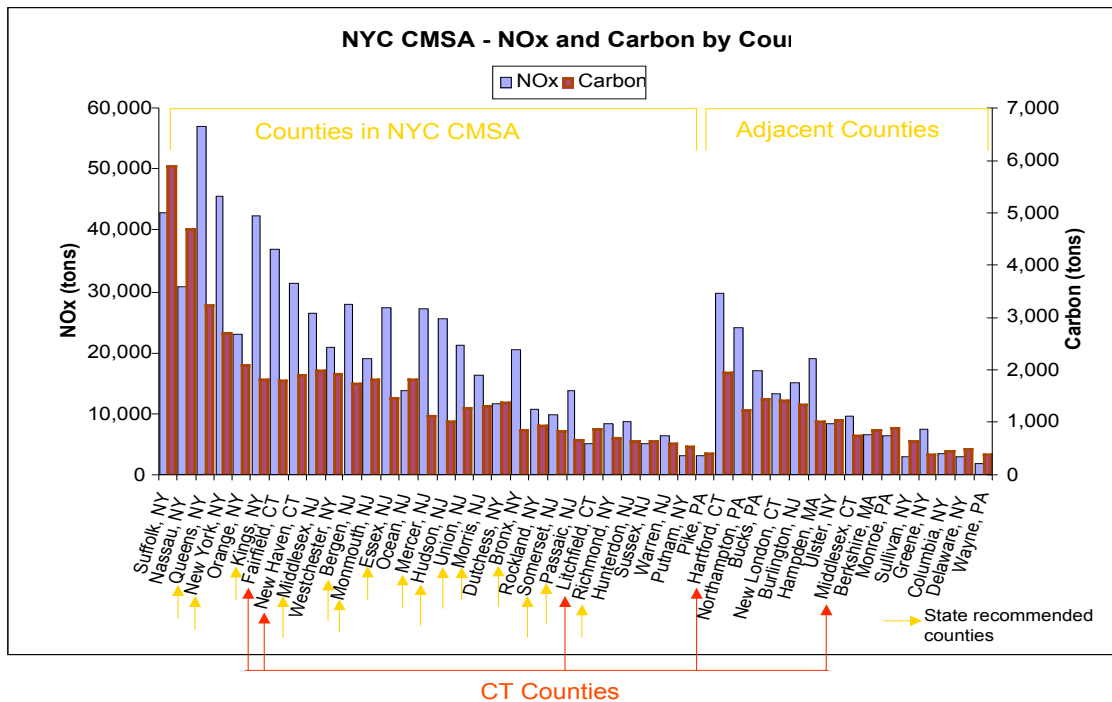
Emissions scores for all counties in the NY-NJ-CT-PA CSA add to 100 (see "Cumulative Emissions Score" on table). Counties adjacent to the CSA are assigned an emissions score based on the emissions scores of counties in the CSA so that emissions from those counties can be compared to the CSA counties.

County	State Recommended Nonattainment	Design Values 2001-2003 ($\mu\text{g}/\text{m}^3$)	Direct PM2.5 (tons)	SO ₂ (tons)	NO _x (tons)	Carbon PM2.5 (tons)	Crustal PM2.5 (tons)	Emissions Score	Cumulative Emissions Score
Suffolk, NY	No	12.3	9,834	45,379	42,938	5,894	3,455	10.8	10.8
Nassau, NY	No	12.4	7,289	12,587	30,695	4,665	2,370	7.9	18.7
Queens, NY	Yes	13.6	5,443	21,315	57,013	3,203	1,539	7.0	25.7
New York, NY	Yes	17.7	4,531	29,811	45,611	2,701	1,269	6.1	31.8
Orange, NY	No	11.6	4,410	30,875	22,978	2,091	2,058	4.5	36.3
Kings, NY	Yes	14.9	3,039	14,163	42,392	1,800	973	4.4	40.7
Fairfield, CT	No	13.3	3,154	20,031	36,762	1,779	1,008	4.3	45.0
New Haven, CT	No ¹	16.7	3,170	17,771	31,345	1,903	1,009	4.2	49.2
Middlesex, NJ	Yes	12.7	3,430	5,663	26,425	1,960	1,269	3.9	53.1
Westchester, NY	No	12.5	3,229	9,680	20,815	1,923	1,154	3.7	56.8
Bergen, NJ	Yes	13.8	2,691	7,945	27,835	1,451	1,726	3.6	60.4
Monmouth, NJ	Yes		3,143	3,028	18,971	1,820	1,226	3.4	63.8
Essex, NJ	Yes	14.5	2,435	8,114	27,325	1,466	808	3.2	67.0
Ocean, NJ	No	11.7	3,291	1,500	13,754	1,802	1,404	3.1	70.1
Mercer, NJ	Yes	14.0	2,950	16,426	27,098	1,113	1,608	3.0	73.1
Hudson, NJ	Yes	14.8	2,529	22,745	25,572	1,004	1,241	2.9	76.0
Union, NJ	Yes	15.7	2,092	5,393	21,149	1,263	688	2.7	78.7
Morris, NJ	Yes	12.6	2,038	3,753	16,208	1,301	648	2.5	81.2
Dutchess, NY	No	11.0	2,804	4,786	11,471	1,387	1,330	2.5	83.7
Bronx, NY	Yes	15.8	1,460	6,723	20,299	849	503	2.1	85.8
Rockland, NY	No		1,762	9,541	10,621	928	625	1.9	87.7
Somerset, NJ	Yes		1,523	2,490	9,743	816	610	1.6	89.3

Passaic, NJ	Yes	13.3	994	4,349	13,645	658	260	1.5	92.3
Litchfield, CT	No		1,574	934	5,062	852	670	1.4	93.7
Richmond, NY	Yes	12.2	1,776	1,079	8,399	708	1,009	1.4	95.1
Hunterdon, NJ	No		1,490	1,158	8,494	628	809	1.3	96.4
Sussex, NJ	No		1,225	872	5,191	612	574	1.1	97.5
Warren, NJ	No	13.5	1,204	975	6,358	600	530	1.1	98.6
Putnam, NY	No		1,040	548	3,083	505	512	0.9	99.5
Pike, PA	No		739	355	2,997	402	317	0.7	100.2
Hartford, CT	No	13.1	3,145	4,326	29,590	1,947	1,058	3.9	
Northampton, PA	No	14.8	5,646	55,105	24,051	1,212	3,374	3.9	
Bucks, PA	Yes ²	14.6	3,100	6,870	16,852	1,443	1,444	2.8	
Burlington, NJ	No		2,298	2,330	15,113	1,326	836	2.5	
Hampden, MA	No	13.5	1,965	16,077	19,050	994	781	2.4	
Ulster, NY	No		2,328	3,818	8,417	1,025	1,235	1.9	
Middlesex, CT	No		1,417	4,751	9,520	731	563	1.5	
Berkshire, MA	No	12.2	1,641	3,702	6,382	826	711	1.5	
Monroe, PA	No		1,758	1,367	6,222	881	811	1.5	
Sullivan, NY	No		1,200	612	2,875	625	544	1.0	
Greene, NY	No		936	3,836	7,511	375	503	0.9	
Columbia, NY	No		1,018	585	3,497	420	574	0.8	
Delaware, NY	No		996	879	2,705	496	475	0.8	
Wayne, PA	No		765	746	1,786	374	365	0.6	

1. Only recommended NA under scenario that EPA disagrees with “hotspot” argument.

2. Recommended to be part of Philadelphia nonattainment area.



EPA developed a national process for assessing emissions based on emissions scores to identify candidate counties for a PM_{2.5} nonattainment designation. This process flags CSA and adjacent counties with relatively high cumulative emissions scores. For the NY-NJ-CT-PA CSA, counties with cumulative emissions scores of $\leq 80\%$ (as well as adjacent counties that have emissions scores that are \geq the emissions score of the 80% CSA county) were considered to be counties with relatively high emissions. The 80% CSA cutoff counties are Morris, NJ and Dutchess, NY (cum emissions scores = 81.2 and 83.7, respectively; emissions scores = 2.5).

This process applied to the New England counties identifies Fairfield, New Haven, and Hartford Counties in Connecticut as candidates for a PM_{2.5} nonattainment designation (i.e., counties with emissions scores ≥ 2.5), and, therefore, requiring further analysis.

Litchfield and Middlesex Counties in Connecticut, and Hampden and Berkshire Counties in Massachusetts are dropped from further analysis because (1) none of these counties contain violating PM_{2.5} monitors, (2) none were recommended for a nonattainment designation by the state, and (3) all have emissions scores ≤ 2.5 .

Factor 2: Air quality

PM_{2.5} Design Values (in $\mu\text{g}/\text{m}^3$) for the three-year period from 2001 to 2003 are given in the table above for all counties in and adjacent to the NY-NJ-CT-PA CSA. In New England, only one county, New Haven, shows a violation of the annual PM_{2.5} standard. However, this factor alone is not sufficient to eliminate the other New England counties as candidates for nonattainment status.

Factors 3 (Population Density and Urbanization) and 4 (Traffic and commuting patterns)

The table below shows population, VMT and commuting data for counties that are included in the NY-NJ-CT-PA CSA and for those that are adjacent to the CSA. The ranking of the counties is based on the number of people commuting to other counties from highest to lowest. The counties that are in the 2003-defined CSA are in bold; other counties are adjacent to the CSA counties.

County	State Recommended NA	2002 Popula-tion	2002 Pop Density (pop/sq mi)	2002 VMT (1000 mi)	Commuting to Other Metro Counties (%)	Commuting to Other Metro Counties (#)
Queens, NY	Yes	2,237,815	20,530	10,441	60	557,383
Kings, NY	Yes	2,488,194	35,045	12,313	51	463,551
Nassau, NY	No	1,344,892	4,686	6,875	41	256,588
Bronx, NY	Yes	1,354,068	32,240	6,440	59	243,970
Bergen, NJ	Yes	895,091	3,825	6,732	42	178,468
Suffolk, NY	No	1,458,655	1,601	7,414	26	175,244
Middlesex, NJ	Yes	775,549	2,494	5,794	43	157,177
Westchester, NY	No	937,279	2,165	4,964	36	154,322
Essex, NJ	Yes	798,301	6,336	6,356	46	150,496
Hudson, NJ	Yes	611,439	13,009	4,518	53	141,386
Union, NJ	Yes	530,763	5,153	4,034	52	123,905
Passaic, NJ	Yes	496,646	2,685	3,568	54	113,164
Monmouth, NJ	Yes	629,836	1,334	5,146	39	112,634
New York NY	Yes	1,546,856	55,245	7,961	15	111,765
Richmond, NY	Yes	457,383	7,752	2,030	54	104,042
Morris, NJ	Yes	478,730	1,021	3,939	41	98,930
Somerset, NJ	Yes	309,886	1,016	2,209	55	82,696
Fairfield, CT	No	896,202	1,432	7,889	19	78,180
Ocean, NJ	No	537,065	844	3,641	37	76,620
New Haven, CT	No ¹	835,657	1,379	6,989	19	72,261

Rockland, NJ	No	291,835	1,677	1,413	45	59,116
Orange, NY	No	356,773	437	3,628	32	48,241
Sussex, NJ	No	148,680	285	1,323	58	42,375
Mercer, NJ	Yes	359,463	1,591	3,869	24	38,571
Hartford, CT	No	867,332	1,178	8,105	9	35,469
Bucks, PA	Yes ²	610,440	1,004	3,830	11	34,474
Putnam, NY	No	98,257	424	781	71	34,078
Dutchess, NJ	No	287,752	359	2,905	27	34,054
Hunterdon, NJ	No	125,795	293	1,893	54	33,861
Burlington, NJ	No	437,871	544	3,748	14	29,263
Litchfield, CT	No	186,515	203	1,170	30	27,825
Warren, NJ	No	107,537	300	1,473	52	26,228
Ulster, NY	No	179,986	160	1,850	30	24,275
Northampton, PA	No	273,324	731	2,132	15	18,557
Middlesex, CT	No	159,679	433	1,560	18	14,700
Monroe, PA	No	148,839	245	1,434	22	13,830
Pike, PA	No	50,095	92	722	46	8,820
Sullivan, NY	No	74,273	77	683	27	7,999
Columbia, NY	No	63,532	100	754	12	3,532
Greene, NY	No	48,538	75	643	7	1,487
Berkshire, MA	No	133,462	143	1,850	2	1,291
Wayne, PA	No	48,889	67	334	6	1,269
Hampden, MA	No	459,116	742	3,708	1	1,016
Delaware, NY	No	47,302	33	508	4	846
1. Only recommended NA under scenario that EPA disagrees with “hotspot” argument. 2. Recommended to be part of Philadelphia nonattainment area.						

The three candidate counties in CT (i.e. Fairfield, New Haven, and Hartford Counties) have moderately sized populations and population densities relative to other counties in the NY-NJ-CT-PA CSA and adjacent counties.

Although there is a much smaller number of commuters in the three Connecticut counties than in some NY counties in the NY-NJ-CT-PA CSA, the numbers of commuters in

Fairfield and New Haven Counties are moderately high, each with more than twice as many commuters as Hartford County.

CT DEP used 2000 Census Bureau data on work-trip origins and destinations to assess Connecticut contribution (i.e., from Fairfield, New Haven, and Litchfield counties) to traffic levels in the New York portion of the CMSA. CT DEP concluded that the Connecticut contribution is 0.7% overall, with 0.1% in the NJ portion and 1.0% in the New York portion of the CMSA. However, heavy-duty truck traffic from Connecticut to both New York and New Jersey may not have been adequately taken into account in this analysis.

All three counties score relatively high for VMT when compared to the rest of the CSA and adjacent counties.

Factor 5: Expected growth

The table below shows population, population growth, VMT and VMT growth for counties that are included in the NY-NJ-CT-PA CSA. The ranking of the counties is based on the VMT growth in thousand of miles between 1996 and 2002 from highest to lowest.

County	2002 Population	Population Growth (90-00)	% growth (90-00)	2002 VMT (1000 mi)	VMT Growth (1000 mi) (96-02)	VMT % chng (96-02)
Kings, NY	2,488,194	164,662	7	12,313	1,011	39
Westchester, NY	937,279	48,593	6	4,964	755	13
Monmouth, NJ	629,836	62,177	11	5,146	739	17
Middlesex, NJ	775,549	78,382	12	5,794	721	14
New Haven, CT	835,657	19,789	2	6,989	714	11
Essex, NJ	798,301	15,427	2	6,356	713	13
Fairfield, CT	896,202	54,922	7	7,889	656	9
Suffolk, NY	1,458,655	97,505	7	7,414	595	9
Warren, NJ	107,537	10,830	12	1,473	578	65
Bergen, NJ	895,091	58,738	7	6,732	540	12
Mercer, NJ	359,463	24,937	8	3,869	526	16
Hudson, NJ	611,439	55,876	10	4,518	506	13
Hunterdon, NJ	125,795	14,213	13	1,893	481	34

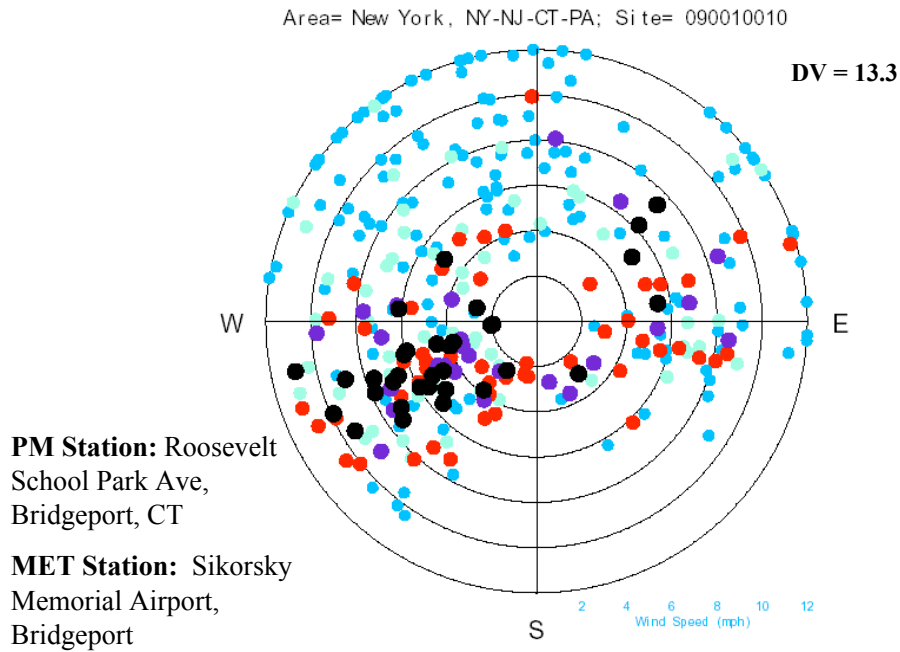
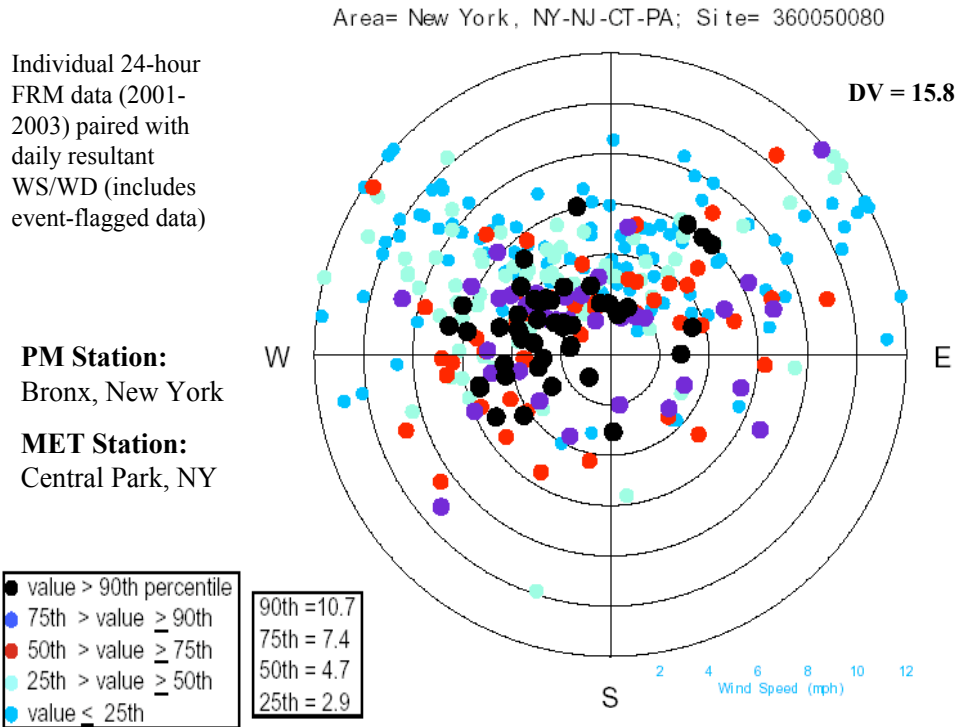
Passaic, NJ	496,646	35,989	8	3,568	466	15
Ocean, NJ	537,065	77,713	18	3,641	464	15
Union, NJ	530,763	28,722	6	4,034	452	13
Dutchess, NY	287,752	20,688	8	2,905	408	12
Pike, PA	50,095	18,336	66	722	406	128
Somerset, NJ	309,886	57,211	24	2,209	336	18
Litchfield, CT	186,515	8,101	5	1,170	232	25
Orange, NY	356,773	33,720	11	3,628	213	2
Queens, NY	2,237,815	277,781	14	10,441	180	2
New York, NY	1,546,856	49,659	3	7,961	137	2
Putnam, NY	98,257	11,804	14	781	134	21
Nassau, NY	1,344,892	47,196	4	6,875	117	2
Bronx, NY	1,354,068	128,861	11	6,440	111	2
Morris, NJ	478,730	48,859	12	3,939	97	3
Sussex, NJ	148,680	13,223	10	1,323	74	6
Richmond, NY	457,383	64,751	17	2,030	35	2
Rockland, NY	291,835	21,278	8	1,413	24	2

Based on analysis of this factor, Fairfield and New Haven counties had low population growth between 1990 and 2000. However, they both had a sizable increase in vehicle miles traveled from 1996-2002, an increase above most other counties in the NY-NJ-CT-PA CSA.

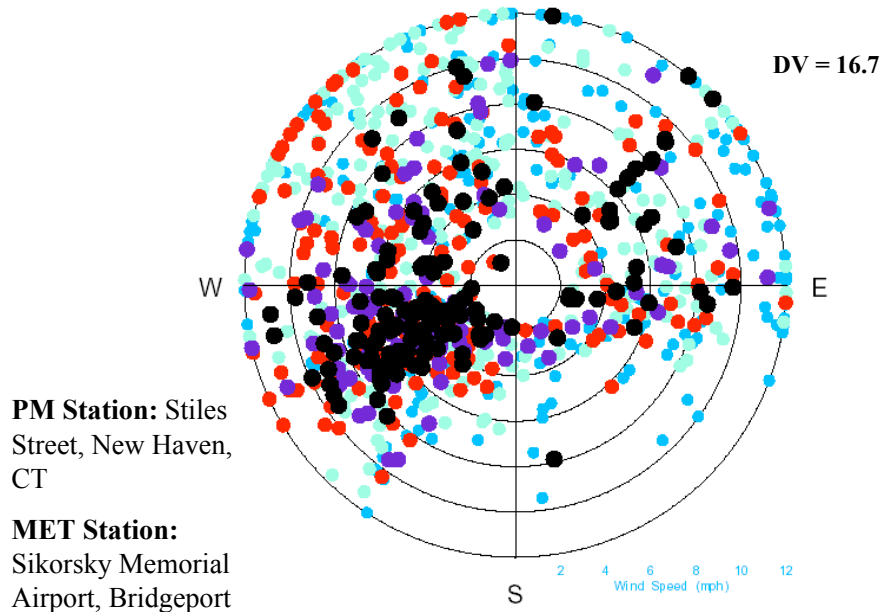
Factor 6: Meteorology

County	Prevailing Wind Direction %			
	NW	SW	SE	NE
Fairfield, CT	34	30	12	24
New Haven, CT	34	30	13	24
Hartford, CT	35	29	13	23

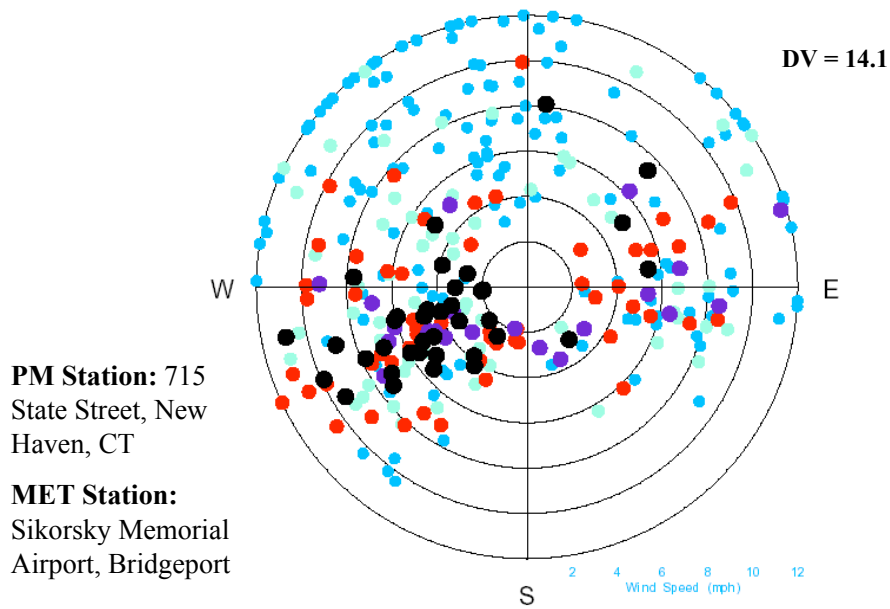
“Bubble Rose” of Wind and PM2.5 data for New York Urban Area



Area= New York, NY-NJ-CT-PA; Site= 090090018



Area= New York, NY-NJ-CT-PA; Site= 090091123



Connecticut did studies to assess whether emissions from Connecticut sources are contributing significantly to violations in other parts of the New York City metropolitan area. These studies included use of the ISCST3 (Industrial Source Complex Simple Terrain) area source model and HYSPLIT4 (HYbrid Single-Particle Lagrangian Integrated Trajectory) model.

Results from the ISCST3 model show that primary PM_{2.5} emissions have low impact on New York City and Hudson Co, NJ. The model estimates the Connecticut source contribution to New York City to be between 1.7 and 2.3%. For receptors in the cities of Bridgeport and New Haven; Connecticut sources contributed > 50% primary PM_{2.5} totals.

For the HYSPLIT4 model, Connecticut obtained maximum daily PM_{2.5} concentrations from January 1999 to September 2003 from a monitor in New York City, rank-ordered them from high to low, and recorded dates of the top and bottom 10 percentiles. They then ran back-trajectory winds once a day for each of those days at three height levels (10m, 500m, and 1000m). Results of this modeling show that air mass during highest PM_{2.5} days originated from and passed through locations in a sector from SSW and SW through W and WNW from New York City, and not from directions that pass over Connecticut.

Although the meteorological data make a strong case that CT is not frequently a significant contributor to elevated PM_{2.5} levels in the New York City urban area, EPA notes that PM_{2.5} is a year-round standard with some contributions during all seasons from many directions, as shown in the “bubble roses” above for monitors in the Bronx, Fairfield and New Haven counties. These roses show that, although not a frequent occurrence, some component of elevated PM_{2.5} measured at the monitor in the Bronx does originate from a northeastern direction (i.e., direction of CT). The roses also show the need to consider the contribution of NJ and NY to the violating monitor in Connecticut. This is also supported by modeling done for the CAIR (see EPA's January 30, 2004 (69 FR 4566) notice of proposed rulemaking (NPR)), which showed that both NJ and NY “contribute significantly” to New Haven County.

Based on analysis of this factor, EPA is not convinced that Fairfield and New Haven counties should be excluded from the New York City nonattainment area. However, Hartford County, which is an adjacent county to the NY-NJ-CT-PA CSA, is further removed geographically and meteorologically from the NYC area. Based on this fact, plus the absence of a violating PM_{2.5} monitor in Hartford County, EPA concludes that Hartford County can drop from further consideration as a nonattainment county.

Factor 7: Geography/topography

The New England portion of the NY-NJ-CT-PA CSA and adjacent counties do not have any geographical or topographical boundaries limiting its airshed.

This factor did not play a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

From a New England perspective, the major jurisdictional boundary in the NY-NJ-CT-PA CSA (and adjacent counties) is the state line between New York and Connecticut. Violating counties in the NY-NJ-CT-PA CSA include New York County (Manhattan), Bronx County, and Union County, NJ. The State of Connecticut has no jurisdictional say in the air quality regulations and policies developed by either New York or New Jersey to address PM_{2.5} emissions in the areas with the violating monitors. In addition, State of Connecticut has very limited influence in the transportation policies developed to address traffic and vehicle miles traveled in the New York City metropolitan area.

On the other hand, areas designated as 8-hour ozone nonattainment areas are also important boundaries for state air-quality planning. Fairfield, New Haven, and Middlesex counties in Connecticut were included in the ozone nonattainment area associated with the New York City metropolitan area. Other counties included in this 9-factor analysis are also designated as 8-hour ozone nonattainment areas, but are not associated with the New York City area. A goal in designating PM_{2.5} nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas. Comparison of ozone areas with potential PM_{2.5} nonattainment areas, therefore, gives added weight to designation of Fairfield and New Haven counties, but not to the other CSA and adjacent counties considered herein.

Factor 9: Level of control of emission sources

The emissions used to prepare the composite emissions scores are for 2001. These emission estimates include any control strategies implemented by the states in the CSA prior to 2001 that may influence emissions of primary PM_{2.5}, SO₂, NO_x, carbon, and crustal PM_{2.5} emissions.

In CT, however, there may be some emission reductions of SO₂ subsequent to 2001 that are not accounted for pursuant to the SO₂ rule Connecticut adopted pursuant to state legislation (see <http://dep.state.ct.us/air2/regs/mainregs/sec19a.pdf>). This rule basically requires compliance with 0.55 lbs/mm BTU by January 1, 2002 and 0.33 lbs/mm BTU by January 1, 2003. To date, this rule has resulted in a significant reduction in statewide SO₂ emissions. However, in the New York City metropolitan area, only a small percentage of the urban increment is from SO₂ (i.e., about 6%). Thus, incorporating the additional SO₂ emission reductions from Connecticut sources in the composite emissions score analysis for the CSA is not expected to change the outcome significantly. Furthermore, the Connecticut SO₂ rule is currently not part of the federally-approved State Implementation Plan, and thus is not federally enforceable. Thus, this factor analysis generally considered the emissions controls currently in place.

6.1.2 Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Connecticut

EPA does not intend to modify its recommendations concerning nonattainment designations and boundaries that were listed in the June 29, 2004 letter to Connecticut.

New Haven and Fairfield

EPA is recommending that New Haven and Fairfield Counties be designated nonattainment. This decision is based on consideration of nine factors, including emissions, air quality, population density, traffic and commuting patterns, expected growth, meteorology, geography/topography, jurisdictional boundaries, and level of control of emission sources. EPA compared emissions, population, and traffic levels in all counties within and adjacent to the New York-Newark-Bridgeport, NY-NJ-CT-PA Combined Statistical Area (CSA). New Haven and Fairfield Counties had similar, or sometimes greater levels for all these factors than other New York counties (e.g., Westchester, Nassau, Suffolk, and Orange) and New Jersey counties (e.g., Middlesex, Bergen, and Monmouth) for which EPA is designating nonattainment. In addition, EPA notes that Fairfield and New Haven Counties are a conduit for a large percentage of the truck traffic that flows throughout New England. As such, this presents an opportunity for Connecticut to work with New York and New Jersey to identify measures to help reduce diesel emissions and, thus, help monitors in the New York urban area to meet PM_{2.5} standards. Based on these considerations, EPA is including New Haven and Fairfield Counties in the New York-N. New Jersey-Long Island, CT-NJ-NY PM_{2.5} nonattainment area.

6.2 Region 2 Nonattainment Areas

6.2.1 EPA 9-Factor Analyses for New Jersey for the Designation of PM_{2.5} Nonattainment Areas

Modifications to New Jersey's Recommendations

Gloucester

New Jersey did not recommend Gloucester County as a nonattainment county. EPA is modifying the New Jersey recommendation by designating Gloucester County as nonattainment.

Gloucester County ranks high for emissions, population, traffic, and commuting patterns. Gloucester is also adjacent to a county with a violating monitor. Point sources are also located near the county with the violating monitor.

Camden

New Jersey did not recommend Camden County as a nonattainment county. EPA is modifying the New Jersey recommendation by designating Camden County as nonattainment.

Camden County ranks high for emissions, population, traffic, and commuting patterns. Camden is also adjacent to a county with a violating monitor. Point sources are also located near the county with the violating monitor.

Burlington

New Jersey did not recommend Burlington County as a nonattainment county. EPA is modifying the New Jersey recommendation by designating Burlington County as nonattainment.

Burlington County ranks high for emissions, population, traffic, and commuting patterns. Burlington is also adjacent to a county with a violating monitor. Point sources are also located near the county with the violating monitor.

Analysis of the New Jersey portion of the PA-NJ-MD C/MSA and adjacent counties

The New Jersey portion of this area includes the counties of Gloucester, Camden, Burlington, Cape May, Atlantic, Cumberland, Salem, Mercer, Monmouth, Ocean, Hunterdon, and Warren. Violating monitors (based on 2001-2003 data) are present in Philadelphia and Delaware Counties in Pennsylvania, and in New Castle in Delaware.

Based on EPA's nine-factor analysis, EPA is recommending that additional counties should be added to the nonattainment area for the New Jersey portion of the PA-NJ-MD C/MSA and adjacent counties.

EPA Recommendation	State Recommendation
Gloucester, Camden, and Burlington	None

The following is a brief summary of the 9 criteria for the New Jersey portion of the PA-NJ-MD C/MSA and adjacent counties. Although listed in the tables for comparison purposes, Monmouth and Mercer counties are not specifically discussed in the analysis since they have been recommended for nonattainment by New Jersey.

Factor 1: Emissions in the PA-NJ-MD C/MSA and for those that are adjacent to the C/MSA

The following table shows total emissions (in tons) and emission scores for Pennsylvania, New York and Maryland, and Delaware included in the PA-NJ-MD C/MSA and for those that are adjacent to the C/MSA. (Data source: 2001 National Emissions Inventory (NEI)).

County	direct PM 2.5 (tons)	SO ₂ (tons)	NO _x (tons)	Carbon PM2.5 (tons)	Crustal PM2.5 (tons)	Emission Score	Cumulative Score
New Castle, DE	4,558	61,499	34,640	2,276	15,147	18.6	18.6
Philadelphia, PA	3,944	16,681	55,011	2,116	1,200	14.0	32.6
Delaware, PA	3,173	24,882	33,259	1,458	1,225	11.1	43.7
Montgomery, PA	3,910	8,721	21,191	1,905	1,700	8.7	52.4
Chester, PA	3,716	11,391	16,909	1,228	2,226	6.9	59.3
Bucks, PA	3,100	6,870	16,852	1,443	1,444	6.8	66.1
Gloucester, NJ	1,909	9,154	21,849	1,035	697	6.5	72.6
Camden, NJ	2,154	4,120	17,025	1,286	727	5.9	78.5
Burlington, NJ	2,298	2,330	15,113	1,326	836	5.6	84.1
Cape May, NJ	2,157	14,578	7,894	938	1,044	5.5	89.6
Atlantic, NJ	1,404	1,905	8,676	773	563	3.3	92.9
Cumberland, NJ	1,374	1,941	7,054	638	669	2.8	95.7
Salem, NJ	1,243	4,485	5,457	487	653	2.6	98.3
Cecil, MD	950	948	5,502	401	518	1.8	100.1
Northampton, PA	5,646	55,105	24,051	1,212	3,374	13.9	
Berks, PA	4,806	17,143	21,834	1,520	2,821	9.1	
Lancaster, PA	5,673	10,786	20,901	1,746	3,569	8.8	
Mercer, NJ	2,950	16,426	27,098	1,113	1,608	8.4	
Monmouth, NJ	3,143	3,028	18,971	1,820	1,226	7.4	
Ocean, NJ	3,291	1,500	13,754	1,802	1,404	6.6	
Lehigh, PA	1,844	6,027	12,154	624	1,018	3.9	
Kent, DE	1,503	5,124	8,512	618	818	3.4	
Harford, MD	1,517	1,946	8,662	754	705	3.3	
Hunterdon, NJ	1,490	1,158	8,494	628	809	2.8	
Warren, NJ	1,204	975	6,358	600	530	2.5	
Kent, MD	438	228	1,009	170	259	0.6	

Applied to New Jersey, the process identifies Mercer, Monmouth, Gloucester, Camden, Burlington, and Ocean Counties as having elevated emissions relative to the remainder of the C/MSA.

Gloucester, Camden, Burlington, and Salem Counties in New Jersey have multiple large point sources which are concentrated along the border of Philadelphia, Delaware and New Castle Counties. In contrast, Ocean County does not have any significant point sources.

The bulk of mobile source emissions from Gloucester, Camden, and Burlington counties would be concentrated along the border of eastern Pennsylvania since the population of the New Jersey counties is concentrated along the border of Philadelphia and Delaware counties. In contrast, the population for Ocean County is concentrated in the northeast section of the county.

Factor 2: Air quality

County	PM 2.5 2001- 2003 Design Value (g/m³)
New Castle, DE	16.2
Philadelphia, PA	16.4
Delaware, PA	15.6
Montgomery, PA	14.3
Chester, PA	15.1
Bucks, PA	14.6
Gloucester, NJ	13.8
Camden, NJ	14.6
Burlington, NJ	No monitor
Cape May, NJ	No monitor
Atlantic, NJ	11.6
Northampton, PA	14.8
Berks, PA	16.4
Lancaster, PA	17.0
Mercer, NJ	14.0
Monmouth, NJ	No monitor
Ocean, NJ	11.7
Lehigh, PA	14.6
Kent, DE	13.1
Harford, MD	13.1
Hunterdon, NJ	No monitor
Kent, DE	13.1

Cumberland, NJ	No monitor
Salem, NJ	No monitor
Cecil, MD	No monitor

New Jersey does not have any design values above the standard in the area.
Gloucester and Camden counties have design values approaching the standard.

The following New Jersey counties are adjacent to counties with violating monitors: Burlington, Camden, Salem and Gloucester.

Factor 3: Population/ Population density

County	2002 Population	2002 Population Density (population per sq mi)
New Castle, DE	512,370	1,203
Philadelphia PA	1,492,231	11,054
Delaware, PA	553,435	3,008
Montgomery PA	766,517	1,587
Chester, PA	450,160	595
Bucks, PA	610,440	1,004
Gloucester, NJ	262,049	806
Ocean, NJ	537,065	844
Camden, NJ	511,957	2,306
Burlington, NJ	437,871	544
Cape May, NJ	102, 013	400
Atlantic, NJ	259,423	462
Northampton, PA	273,324	731
Berks, PA	382,108	445
Lancaster, PA	478,561	504
Lehigh, PA	317,533	915
Kent, DE	131,069	222
Harford, MD	227,713	518
Mercer, NJ	359,463	1,591
Monmouth, NJ	629,836	1,334

Cumberland, NJ	147,768	302
Salem, NJ	64,438	191
Cecil, MD	90,335	260

The analysis for this factor looks at population data from 2002. Population data indicates the likelihood of population-based emissions to contribute to monitored violations.

Due to its large concentrated population and relative land size area, the county of Philadelphia dominates the remainder of the C/MSA.

To a much lesser extent, Camden County is also more urbanized than the majority of the remaining counties in the C/MSA.

The population of Gloucester, Camden, and Burlington are concentrated along the border of Philadelphia and Delaware counties. In contrast, the population of Ocean County is concentrated in the northeastern most section of the county.

Factor 4: Traffic and commuting patterns

County	VMT¹ (1000 miles)	#Commuters to Philadelphia, PA	#Commuters to Delaware, PA	#Commuters to New Castle, DE
New Castle, DE	4,957	5,386	8,150	209,742
Philadelphia, PA	10,213	429,667	21,802	1,856
Delaware, PA	3,513	48,151	137,988	9,002
Montgomery, PA	4,677	54,576	11,758	1,201
Chester, PA	3,128	10,568	17,870	12,976
Bucks, PA	3,830	31,892	2,754	493
Gloucester, NJ	2,312	13,778	3,179	1,662
Ocean, NJ	3,641	491	118	45
Camden, NJ	4,332	32,961	3,232	1,286
Burlington, NJ	3,748	17,661	1,771	597
Cape May, NJ	749	716	224	109
Atlantic, NJ	2,236	1,359	314	175
Northampton, PA	2,132	244	66	16
Berks, PA	3,952	702	505	157
Lancaster, PA	4,004	607	615	523

Lehigh, PA	2,738	578	171	22
Kent, DE	1,633	37	125	6,058
Harford, MD	2,208	88	35	1,033
Monmouth, NJ	5,146	622	66	40
Mercer, NJ	3,869	1,574	244	139
Cumberland, NJ	1,166	618	105	171
Cecil, MD	1,340	254	373	14,059
Salem, NJ	734	615	486	3,258

¹ Vehicle Miles Traveled within county in 2002

The analysis of this factor looks at the number of commuters who drive to counties within the metropolitan area with violating monitors, as well as total Vehicle Miles Traveled (VMT) for each county in thousands of miles.

The largest numbers of commuters are from Pennsylvania and Delaware counties. Camden, Burlington, and Gloucester Counties also have large numbers of people who commute to Philadelphia. All other New Jersey counties are low for the number of commuters. Ocean County has a very low number of commuters to Philadelphia.

After Philadelphia, there does not appear to be a significant difference in VMT between the remainder of the counties in the CMSA.

Factor 5: Expected growth

County	2002 Population	% growth (90-00)	Population Growth (90-00)
New Castle, DE	512,370	13	58,319
Philadelphia, PA	1,492,231	-4	-68,027
Delaware, PA	553,435	1	3,213
Montgomery, PA	766,517	11	71,986
Chester, PA	450,160	15	57,105
Bucks, PA	610,440	10	56,461
Gloucester, NJ	262,049	11	24,591
Ocean, NJ	537,065	18	77,713
Camden, NJ	511,957	1	6,108
Burlington, NJ	437,871	10	28,328
Cape May, NJ	102,013	8	7,237

Atlantic, NJ	259,423	13	28,225
Northampton, PA	273,324	8	19,961
Berks, PA	382,108	11	37,115
Lancaster, PA	478,561	11	47,836
Lehigh, PA	317,533	7	20,960
Kent, DE	131,069	14	15,704
Harford, MD	227,713	20	36,458
Monmouth, NJ	629,836	11	62,177
Mercer, NJ	359,463	8	24,937
Cumberland, NJ	147,768	6	8,385
Salem, NJ	64,438	-2	-1,009
Cecil, NJ	90,335	20	14,604

Ocean, Gloucester, and Burlington Counties experienced moderate growth in New Jersey.

Factor 6: Meteorology

This factor did not play a significant role in the decision making process for New Jersey counties with the exception of Ocean, Cape May, and Atlantic Counties.

County	Prevailing Wind Direction %			
	NW	SW	SE	NE
Philadelphia, PA	35	31	15	20
Delaware, PA	35	30	15	20
New Castle, DE	38	28	15	19

The prevailing wind direction to counties with violating monitors is predominantly from the NW and SW.

Ocean, Cape May, and Atlantic Counties had a negligible contribution based upon analysis of pollution roses.

Further analysis of 24 hour back trajectories (HYSPLIT model) calculated and plotted for twenty-two high PM days in Philadelphia indicate that emissions from Ocean County have a very low impact on Philadelphia. The HYSPLIT model was used with 80 KM EDAS data to calculate 24-hour back trajectories ending at an elevation of 500 meters over Philadelphia ending at 07 UTC, 13 UTC, 19 UTC, and 01 UTC (next day). Back trajectories passed through Ocean County only on four days. Further review of those trajectories indicate the following:

January 13, 2001

One out of the four trajectories plotted (i.e. back trajectory ending at 19 WTC) passed through the northwesternmost section of the county. That section of the county has a low population density. The trajectory continued through Camden and Gloucester and looped through heavily populated sections of Philadelphia (entered the city from the west).

Dec 10, 2002

Light and variable winds were observed which would indicate the impact of local emissions from the Philadelphia area. One out of the four trajectories plotted (i.e., back trajectory ending at 07 WTC) passed through the center of the county. The trajectory looped through Kent and New Castle and then entered Philadelphia from the west.

Jan 30, 2003

One out of the four trajectories plotted (i.e., back trajectory ending at 19 WTC) passed through the northwesternmost section of the county. That section of the county has a low population density.

Oct 27, 2000

Two out of the four trajectories plotted (i.e., back trajectory ending at 07 and 13 WTC) passed through the southernmost section of the county. That section of the county has a low population density. The trajectory ending at 01 WTC on October 28th was from the west.

Factor 7: Geography/topography

The area does not have any geographical or topographical boundaries limiting its airshed in the areas.

Factor 8: Jurisdictional boundaries

EPA is striving to achieve consistency with the 8-hour ozone nonattainment areas for purposes of state air quality planning. Although this factor is considered as part of the analysis, this factor is not a dominant factor in the decision making process.

All counties in New Jersey were designated nonattainment for the 8-hour ozone standard on April 15, 2004.

Factor 9: Level of control of emission sources

This factor did not play a significant role in the decision making. The level of control of emission is reflected in factor 1.

6.2.2 EPA 9-Factor Analyses for New York for the Designation of Nonattainment Areas for PM_{2.5}

Modifications to New York's Recommendations

Westchester

New York did not recommend Westchester County as a nonattainment county. EPA is modifying the New York recommendation by designating Westchester County as nonattainment.

Westchester County ranks high for emissions, population, traffic, and commuting patterns. Westchester is also adjacent to a county with a violating monitor. In addition, an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Westchester County.

Nassau

New York did not recommend Nassau County as a nonattainment county. EPA is modifying the New York recommendation by designating Nassau County as nonattainment.

Nassau County ranks high for emissions, population, traffic, and commuting patterns. In addition, an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Nassau County.

Suffolk

New York did not recommend Suffolk County as a nonattainment county. EPA is modifying the New York recommendation by designating Suffolk County as nonattainment.

Suffolk County ranks high for urban excess emissions, population, traffic, and commuting patterns. In addition, an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Suffolk County.

Orange

New York did not recommend Orange County as a nonattainment county. EPA is modifying the New York recommendation by designating Orange County as nonattainment.

Orange County ranks high for emissions. Orange County also has several large point sources. In addition, an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Orange County.

Rockland

New York did not recommend Rockland County as a nonattainment county. EPA is modifying the New York recommendation by designating Rockland County as nonattainment. This county is recommended because it is contiguous to both Orange and Westchester Counties, and an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Rockland County.

Analysis of the New York and New Jersey portions of the NY-NJ-CT-PA C/MSA and adjacent counties

The New York portion of this area includes the counties of Suffolk, Nassau, Queens, New York, Orange, Kings, Westchester, Dutchess, Bronx, Rockland, Richmond, Putnam, Ulster, Sullivan, Greene, Columbia, and Delaware. Violating monitors (based on 2001-2003 data) in New York State are present in New York and the Bronx counties.

The New Jersey portion of the area includes Middlesex, Bergen, Monmouth, Essex, Ocean, Mercer, Hudson, Union, Morris, Somerset, Passaic, Hunterdon, Sussex, Warren, and Burlington. A violating monitor (based on 2001-2003 data) in New Jersey is present in Union County.

A violating monitor (based on 2001-2003 data) is also present in New Haven, Connecticut.

New York State has recommended that the most effective boundary for the New York portion of this nonattainment area would consist of the five counties comprising New York City which includes New York, the Bronx, Kings, Queens, and Richmond Counties.

New Jersey's recommendation includes Hudson, Union, Middlesex, Bergen, Monmouth, Essex, Mercer, Morris, Somerset, and Passaic counties.

Based on EPA's nine-factor analysis, EPA is recommending that additional counties should be added to the nonattainment area for the New York portion of the NY-NJ-CT-PA C/MSA and adjacent counties. EPA is not recommending that any additional counties be added to the New Jersey portion of the NY-NJ-CT-PA C/MSA and adjacent counties.

NY-NJ-CT-PA Area	EPA Recommendation	State Recommendation
New York	New York, the Bronx, Kings, Queens, Richmond, Suffolk, Nassau, Orange, Westchester, and Rockland.	New York, the Bronx, Kings, Queens, and Richmond Counties.
New Jersey	Hudson, Union, Middlesex, Bergen, Monmouth, Essex, Mercer, Morris, Somerset, Passaic counties.	Hudson, Union, Middlesex, Bergen, Monmouth, Essex, Mercer, Morris, Somerset, Passaic counties.

The following is a brief summary of the 9 criteria for the New York State and New Jersey portions of the NY-NJ-CT-PA C/MSA including adjacent counties. Counties that are in the C/MSA are in bold. Burlington, NJ was not evaluated since it was recommended for nonattainment by us based on our 9-factor analysis for the New Jersey portion of the PA-NJ-MD C/MSA area.

Factor 1: Emissions for New York and New Jersey Counties included in the NY-NJ-CT-PA and for those that are adjacent to the C/MSA

The following table shows total emissions (in tons) and Emission Scores for New York and New Jersey Counties included in the NY-NJ-CT-PA and for those that are adjacent to the C/MSA. (Data source: 2001 National Emissions Inventory (NEI)).

County	direct PM 2.5 (tons)	SO ₂ (tons)	NO _x (tons)	Carbon PM2.5 (tons)	Crustal PM2.5 (tons)	Emission Score	Cumulative Score
Suffolk, NY	9,834	45,379	42,938	5,894	3,455	10.8	10.8
Nassau, NY	7,289	12,587	30,695	4,665	2,370	7.9	18.7
Queens, NY	5,443	21,315	57,013	3,203	1,539	7.0	25.7
New York, NY	4,531	29,811	45,611	2,701	1,269	6.1	31.8
Orange, NY	4,410	30,875	22,978	2,091	2,058	4.5	36.3
Kings, NY	3,039	14,163	42,392	1,800	973	4.4	40.7
Middlesex, NJ	3,430	5,663	26,425	1,960	1,269	3.9	53.1
Westchester, NY	3,229	9,680	20,815	1,923	1,154	3.7	56.8
Bergen, NJ	2,691	7,945	27,835	1,451	1,726	3.6	60.4
Monmouth, NJ	3,143	3,028	18,971	1,820	1,226	3.4	63.8
Essex, NJ	2,435	8,114	27,325	1,466	808	3.2	67.0
Ocean, NJ	3,291	1,500	13,754	1,802	1,404	3.1	70.1
Mercer, NJ	2,950	16,426	27,098	1,113	1,608	3.0	73.1
Hudson, NJ	2,529	22,745	25,572	1,004	1,241	2.9	76.0
Union, NJ	2,092	5,393	21,149	1,263	688	2.7	78.7
Morris, NJ	2,038	3,753	16,208	1,301	648	2.5	81.2
Dutchess, NY	2,804	4,786	11,471	1,387	1,330	2.5	83.7
Bronx, NY	1,460	6,723	20,299	849	503	2.1	85.8
Rockland, NY	1,762	9,541	10,621	928	625	1.9	87.7
Somerset, NJ	1,523	2,490	9,743	816	610	1.6	89.3
Passaic, NJ	994	4,349	13,645	658	260	1.5	92.3
Richmond, NY	1,776	1,079	8,399	708	1,009	1.4	95.1
Hunterdon, NJ	1,490	1,158	8,494	628	809	1.3	96.4
Sussex, NJ	1,225	872	5,191	612	574	1.1	97.5
Warren, NJ	1,204	975	6,358	600	530	1.1	98.6
Putnam, NY	1,040	548	3,083	505	512	0.9	99.5
Burlington, NJ	2,298	2,330	15,113	1,326	836	2.5	
Ulster, NY	2,328	3,818	8,417	1,025	1,235	1.9	
Sullivan, NY	1,200	612	2,875	625	544	1.0	
Greene, NY	936	3,836	7,511	375	503	0.9	
Columbia, NY	1,018	585	3,497	420	574	0.8	
Delaware, NY	996	879	2,705	496	475	0.8	

Applied to New York, this process identifies Suffolk, Nassau, Queens, New York, Orange, Kings, Westchester, and Dutchess as having elevated emissions relative to the remainder of the C/MSA.

Applied to New Jersey, the process identifies Middlesex, Bergen, Monmouth, Essex, Ocean, Mercer, Hudson, Union, and Morris as having elevated emissions relative to the remainder of the C/MSA.

Putnam, Sussex, and Ocean Counties do not have any significant point sources.

Factor 2: Air quality

County	PM2.5 2001- 2003 Design Value ($\mu\text{g}/\text{m}^3$)
Suffolk, NY	12.3
Nassau, NY	12.4
Queens, NY	13.6
New York, NY	17.7
Orange, NY	11.6
Kings, NY	14.9
Middlesex, NJ	12.7
Fairfield, CT	13.3
New Haven, CT	16.7
Westchester, NY	12.5
Bergen, NJ	13.8
Monmouth, NJ	No monitor
Essex, NJ	14.5
Ocean, NJ	11.7
Mercer, NJ	14.0
Hudson, NJ	14.8
Union, NJ	15.7
Morris, NJ	12.6
Dutchess, NY	11.0
Bronx, NY	15.8
Rockland, NY	NA
Somerset, NJ	No monitor
Passaic, NJ	13.3
Richmond, NY	12.2
Hunterdon, NJ	No monitor
Sussex, NY	No monitor
Warren, NJ	No monitor
Putnam, NY	No monitor

Ulster, NY	No monitor
Sullivan, NY	No monitor
Greene, NY	No monitor
Columbia, NY	No monitor
Delaware, NY	No monitor

All counties with design values above the standard have been recommended for nonattainment designation by New York and New Jersey. Suffolk, Nassau, Westchester, Queens, Kings, Westchester, and Richmond counties in New York had design values approaching the standard. Middlesex, Bergen, Essex, Mercer, Hudson, Morris, and Passaic had design values approaching the standard in New Jersey.

The following New York counties are adjacent to counties with violating monitors: Westchester, Queens, Kings, and Richmond. The following New Jersey counties are adjacent to counties with violating monitors: Bergen, Essex, Hudson, Middlesex, Somerset, and Morris.

Factor 3: Population/ Population density

County	2002 Population	2002 Population Density (population per sq mi)
Suffolk, NY	1,458,655	1601
Nassau, NY	1,344,892	4686
Queens, NY	2,237,815	20,530
New York, NY	1,546,856	55,245
Orange, NY	356,773	437
Kings, NY	2,488,194	35,045
Middlesex, NJ	775,549	2,494
Westchester, NY	937,279	2165
Bergen, NJ	895,091	3,825
Monmouth, NJ	629,836	1,334
Essex, NJ	798,301	6,336
Ocean, NJ	537,065	844
Mercer, NJ	359,463	1,591
Hudson, NJ	611,439	13,009
Union, NJ	530,763	5,153
Morris, NJ	478,730	1,021

Dutchess, NY	287,752	359
Bronx, NY	1,354,068	32,240
Rockland, NY	291,835	1677
Richmond, NY	457,383	7,752
Somerset, NJ	309,886	1,016
Passaic, NJ	496,646	2,685
Ulster, NY	179,986	160
Hunterdon, NJ	125, 795	293
Sussex, NJ	148,680	285
Warren, NJ	107,537	300
Putnam, NY	98,257	424
Sullivan, NY	74,273	77
Greene, NY	48,538	75
Columbia, NY	63,532	100
Delaware, NY	47,302	33

Due to their large concentrated population and relative land area size, the counties within New York City (i.e., New York, Bronx, Kings, Queens, and Richmond counties) are high for this factor (i.e., high population densities, high population relative to the remainder of the CMSA and adjacent counties). Suffolk, Nassau, and Westchester counties in New York; and Middlesex, Essex, Hudson, and Union in New Jersey also score moderately high for this factor.

Factor 4: Traffic and commuting patterns

County	VMT¹ (1000 miles)	#Commuters to New York Co.	#Commuters to Bronx Co.	# Commuters to Union Co.	# Commuters to New Haven, CT
Suffolk, NY	7,414	41,121	2,614	180	113
Nassau, NY	6,875	94,485	6,274	187	90
Queens, NY	10,441	346,268	18,373	780	138
New York, NY	7,961	631,132	20,775	967	178
Orange, NY	3,628	9,610	2,414	147	29
Kings, NY	12,313	341,155	11,365	1,567	112
Middlesex, NJ	5,794	25,765	355	26,653	51
Westchester, NY	4,964	79,643	27,053	327	343

Bergen, NJ	6,732	61,253	5,353	5,124	74
Monmouth, NJ	5,146	22,425	313	8,319	32
Essex, NJ	6,356	28,076	782	24,052	10
Ocean, NJ	3,641	2,964	115	4,567	13
Mercer, NJ	3,869	5,654	147	1,291	15
Hudson, NJ	4,518	58,423	1,214	6,740	23
Union, NJ	4,034	16,305	417	113,263	11
Morris, NJ	3,939	11,516	268	8,755	15
Dutchess, NY	2,905	3,963	1,085	22	199
Bronx, NY	6,440	159,664	168,903	586	56
Rockland, NY	1,413	17,025	6,245	350	56
Somerset, NJ	2,209	6,243	87	11,835	14
Passaic, NJ	3,568	8,402	473	2,943	5
Richmond, NY	2,030	53,249	1,095	1,486	11
Ulster, NY	1,850	1,565	1,565	0	11
Fairfield, CT	7,889	24,831	1,258	56	21,900
New Haven, CT	6,989	1,584	183	23	290,098
Hartford, CT	8,105	460	36	11	16,948
New London, CT	2,958	126	19	9	1,638
Hunterdon, NJ	1,893	1,176	7	3,069	0
Sussex, NJ	1,323	1,449	94	967	13
Warren, NJ	1,473	562	5	991	0
Putnam, NY	781	4,416	2,021	30	181
Sullivan, NY	683	829	110	6	0
Greene, NY	643	305	10	8	0
Columbia, NY	754	610	37	0	4
Delaware, NY	508	248	9	0	4

Note: CT counties shown for comparison purposes

¹ Vehicle Miles Traveled within county in 2002

The largest number of commuters to counties with violating monitors in New York and New Jersey are from the following counties within New York City: New York, Queens, Kings, and

the Bronx. A slightly smaller but still significant number of commuters are also traveling into New York, Bronx, and Union counties from Nassau, Westchester, Suffolk, and Richmond Counties in New York; and Middlesex, Bergen, Monmouth, Essex, Hudson, and Union Counties in New Jersey. The remaining counties in New York and New Jersey have low numbers of commuters to counties in the C/MSA with violating monitors.

Suffolk, Nassau, Queens, New York, Kings, and the Bronx in New York; and Middlesex, Bergen, and Essex in New Jersey score the highest for VMT when compared to the rest of the C/MSA and adjacent areas.

Both New York and New Jersey counties have a very low number of commuters to New Haven County, CT.

Factor 5: Expected growth

County	2002 Population	% growth (90-00)	Population Growth (90-00)
Suffolk, NY	1,458,655	7	97,505
Nassau, NY	1,344,892	4	47,196
Queens, NY	2,237,815	14	277,781
New York, NY	1,546,856	3	49,659
Orange, NY	356,773	11	33,720
Kings, NY	2,488,194	7	164,662
Middlesex, NJ	775,549	12	78,382
Westchester, NY	937,279	6	48,593
Bergen, NJ	895,091	7	58,738
Monmouth, NJ	629,836	11	62,177
Essex, NJ	798,301	2	15,427
Ocean, NJ	537,065	18	77,713
Mercer, NJ	359,463	8	24,937
Hudson, NJ	611,439	10	55,876
Union, NJ	530,763	6	28,722
Morris, NJ	478,730	12	48,859
Dutchess, NY	287,752	8	20,688
Bronx, NY	1,354,068	11	128,861
Rockland, NY	291,835	8	21,278

Somerset, NJ	309,886	24	57,211
Passaic, NJ	496,646	8	35,989
Richmond, NY	457,383	17	64,751
Ulster, NY	179,986	8	12,445
Hunterdon, NJ	125,795	13	14,213
Sussex, NJ	148,680	10	13,223
Warren, NJ	107,537	12	10,830
Putnam, NY	98,257	14	11,804
Sullivan, NY	74,273	7	4,689
Greene, NY	48,538	8	3,456
Columbia, NY	63,532	0	112
Delaware, NY	47,302	2	830

Based upon an analysis of this factor, the counties of Queens, Kings, the Bronx, and Somerset counties have been identified as experiencing either significant recent growth on a percentage or absolute basis. Orange, Richmond, Ocean, Suffolk, Middlesex, Monmouth, Hudson, Morris, Richmond, Hunterdon, Sussex, Warren, and Putnam counties experienced moderate growth. The remaining counties have very low growth.

Factor 6: Meteorology

This factor did not play a significant role in the decision making process for Queens, New York, Kings, Bronx, Richmond in New York. Meteorology did not play a significant role in the decision making process for New Jersey Counties with the exception of Ocean County.

County	Prevailing Wind Direction %			
	NW	SW	SE	NE
New York, NY	34	29	11	26
Bronx, NY	33	30	12	25
Union, NJ	31	32	14	23
New Haven, CT	34	30	13	24

The prevailing wind direction to counties with violating monitors is predominantly from the northwest, southwest, and northeast.

Analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Suffolk, Nassau, Orange, Westchester, Dutchess, Rockland, and Ulster Counties.

EPA REMSAD (Regional Modeling System for Aerosols and Deposition) model used during the analysis for the Interstate Air Quality Rule demonstrated that the maximum contribution from New York State to the monitor in New Haven was $0.85 \text{ } \mu\text{g}/\text{m}^3$, or above the $0.15 \text{ } \mu\text{g}/\text{m}^3$ threshold for determining whether emissions in a State make a significant contribution to PM_{2.5} nonattainment in another state.

Ocean County had a negligible contribution based upon the analysis of pollution roses and back trajectory analysis to New York City. Analysis of back trajectories (HYSPLIT model) calculated and plotted for the thirty-nine high PM days in New York City indicate that emissions from Ocean County have a very low impact on New York City. Back trajectories passed through Ocean County on only two days. Further review of these trajectories indicate the following:

August 28, 2001

Two out of the four trajectories plotted for this day passed through Ocean County. It is not likely that Ocean County was the source of the high PM on this day. The analysis from the Bronx speciation monitor showed that the particulate matter was mostly sulfate. Ocean County is a very low emitter of sulfur dioxide (i.e. 1,500 released in 2001)

October 6, 2000

One out of four trajectories plotted for this day passed through Ocean County. This trajectory also passed through areas with a heavy concentration of point sources in the Camden/Philadelphia and northeastern New Jersey areas before entering New York City from the west.

Factor 7: Geography/topography

The area does not have any geographical or topographical boundaries limiting its airshed in the areas.

Factor 8: Jurisdictional boundaries

EPA is striving to achieve consistency with the 8-hour ozone nonattainment areas for purposes of state air quality planning. Although this factor is considered as part of the analysis, this factor is not a dominant factor in the decision making process.

All counties in New Jersey were designated nonattainment for the 8-hour ozone standard on April 15, 2004. All counties within the New York portion of the NY-NJ-CT-PA C/MSA and adjacent counties, with the exception of Ulster, Sullivan, Columbia, and Delaware, were also designated nonattainment for ozone.

Factor 9: Level of control of emission sources

This factor does not play a significant role in the decision making process. The level of control of emission sources is reflected in factor 1.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

New Jersey

EPA does not intend on modifying its recommendations concerning nonattainment designations and boundaries which were listed in the June 29, 2004 letter to New Jersey.

EPA provides further explanation for not including Cape May, Cumberland, Salem, Ocean, Sussex, Hunterdon and Warren counties in New Jersey in this section.

Cape May. EPA is recommending that Cape May County be designated attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitor in Atlantic County is attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the Philadelphia metropolitan area: the county has low emissions, low population and low population density, low growth, low VMT and a low number of commuters to nonattainment counties within the metropolitan area. Analysis of meteorology (pollution and wind roses, and back trajectories) also shows low impact to counties with nonattainment monitors.

Cumberland. EPA is recommending that Cumberland County be designated as attainment/unclassifiable. Although the county does not have a PM2.5 monitor, nearby monitors in Atlantic and Gloucester Counties are attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the Philadelphia metropolitan area: the county has low emissions, low growth, low population and population density, low VMT and a low number of commuters to nonattainment counties within the metropolitan area. Analysis of meteorology (pollution and wind roses, and back trajectories) also shows low impact to counties with nonattainment monitors.

Salem. EPA is recommending that Salem County be designated as attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitor in Gloucester County is attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the Philadelphia metropolitan area: the county has low overall emissions, low population and population density, low growth, low VMT and a low number of commuters to nonattainment counties within the metropolitan area.

Ocean. EPA is recommending that Ocean County be designated attainment/unclassifiable. The PM2.5 monitor in the county is monitoring below the standard. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York and Philadelphia metropolitan areas: the county does not have significant point sources and has a low number of commuters to nonattainment counties within the New York and Philadelphia metropolitan areas. Analysis of meteorology (pollution and wind roses, and back trajectories) shows low impact from emissions to nearby counties with nonattainment monitors.

Sussex. EPA is recommending that Sussex County be designated attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitors in Passaic and Morris counties are attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York metropolitan area: the county has very

low emissions, low growth, low population and population density, low VMT and a low number of commuters to nonattainment counties within the metropolitan area.

Hunterdon. EPA is recommending that Hunterdon County be designated attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitors in Morris County are attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York metropolitan area: the county has very low emissions, low population and population density, low VMT and a low number of commuters to nonattainment counties within the metropolitan area.

Warren. EPA is recommending that Warren County be designated attainment/unclassifiable. The PM2.5 monitor in the county is monitoring below the standard. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York metropolitan area: the county has very low emissions, low population and population density, low VMT and a low number of commuters to nonattainment counties within the metropolitan area.

New York

EPA does not intend on modifying its recommendations concerning nonattainment designations and boundaries which were listed in the June 29, 2004 letter to New York.

EPA provides further explanation for nonattainment designations for Orange and Rockland Counties. EPA also provides further explanation for not including Dutchess, Putnam, Ulster counties in the New York metropolitan nonattainment area.

Orange. EPA has determined that the violating monitor in New Haven County is not representative of community exposure. Notwithstanding that fact, EPA believes that Orange County contributes to PM 2.5 levels in the New York metropolitan area. Specifically, EPA has determined that emissions from Orange County are significant.. EPA also took into consideration that there are large power plants located in the county and that they contribute to the problem in the New York metropolitan area.

Rockland. EPA has determined that the violating monitor in New Haven County is not representative of community exposure. Notwithstanding that fact, EPA believes that Rockland County contributes to PM 2.5 levels in the New York metropolitan area. Specifically, EPA has determined that the number of commuters from Rockland County into the New York metropolitan area are significant. EPA also took into consideration that there are large power plants located in the county and that they contribute to the problem in the New York metropolitan area.

Dutchess. EPA is recommending that Dutchess County be designated attainment/unclassifiable. The PM2.5 monitor in the county is monitoring below the standard. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York: the county has a low population and population density, low growth, low VMT and a

low number of commuters to nonattainment counties within the metropolitan area. Analysis of meteorology (pollution and wind roses, and back trajectories) shows low impact from emissions to nearby counties with nonattainment monitors.

Putnam. EPA is recommending that Putnam be designated attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitor in Westchester and Orange counties are attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York metropolitan area: the county has very low emissions, a low population and population density, low VMT and a low number of commuters to nonattainment counties within the metropolitan area. Analysis of meteorology (pollution and wind roses, and back trajectories) shows low impact from emissions to nearby counties with nonattainment monitors.

Ulster. EPA is recommending that Ulster be designated attainment/unclassifiable. Although the county does not have a PM2.5 monitor, the nearby monitors in Dutchess and Orange counties are attaining. Analysis of the 9 factors provides sufficient evidence that the county does not contribute to nonattainment monitors in the New York metropolitan area: the county has low emissions, a low population and population density, low growth, low VMT and a low number of commuters to nonattainment counties within the metropolitan area. Analysis of meteorology (pollution and wind roses, and back trajectories) shows low impact from emissions to nearby counties with nonattainment monitors.

6.3 Region 3 Nonattainment Areas

6.3.1 EPA 9-Factor Analyses for Delaware for the Designation of Nonattainment Areas for PM_{2.5}

Enclosure A

The fourth column of the following table identifies the individual county within Delaware that EPA intends to designate as nonattainment.

Area	Delaware Counties in 1999 Metropolitan Statistical Area	State of Delaware Recommendation	PM _{2.5} Designation
Philadelphia PA-NJ-DE-MD	New Castle	New Castle*	New Castle
Total Number of Counties	1	1	1

* Delaware recommended New Castle County not be included as part of the Philadelphia CMSA

State Summary

The State of Delaware, in a Governor Minner letter dated February, 17, 2004, recommended New Castle County as nonattainment. The state suggested that New Castle should be designated as a separate nonattainment area from the Philadelphia metropolitan area.

Philadelphia Area- New Castle County

Discussion

The Philadelphia Metropolitan Statistical Area (MSA) is comprised of five counties in Pennsylvania, New Castle County in Delaware, and additional counties in Maryland and New Jersey. The table below lists the counties in the MSA. Four counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Philadelphia MSA is considered a presumptive nonattainment area. New Castle County monitored a violation. Philadelphia County monitored 16.4 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This value is being considered the Design Value for the Philadelphia nonattainment area.

The State of Delaware recommended New Castle County, part of the Philadelphia MSA, be designated as a separate nonattainment area.

EPA has reviewed the State's recommendations and intends, based on the national guidance and the information reviewed, to designate New Castle County as nonattainment with the Philadelphia nonattainment area.

Summary of Evaluation of the Philadelphia MSA

The New Jersey counties have been evaluated and are discussed in a separate document prepared by Region 2. New Castle County, DE and Chester and Montgomery Counties in Pennsylvania have moderate to high emissions contribution to the area, based on the weighted emissions factor. Therefore, EPA has reviewed these counties based on the remaining 8 factors to determine the appropriate designation. The population density, growth and commuting patterns when compared to the core MSA counties in this area support including these counties in the nonattainment area. Existing EPA National Policy suggests retaining at least the MSA boundaries as the nonattainment area. The tables below summarize the data used to determine the designation status of New Castle County.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Although additional information was provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating New Castle County as part of the Philadelphia MSA.

PHILADELPHIA, PA MSA					
Status of Counties: Alphabetical by State					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	DE	New Castle	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	MD	Cecil	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Atlantic	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Burlington	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Camden	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cape May	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cumberland	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Gloucester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Salem	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Bucks	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Chester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Delaware	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Montgomery	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Philadelphia	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD

**SUMMARY OF FACTOR 1: EMISSIONS
PHILADELPHIA, PA MSA**

**** Counties Listed by Percent Contribution to area****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor	PM2.5 Designation
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal		
3	DE	New Castle	4,558	61,499	34,640	24,088	2,605	2,276	1,645	18.6	Nonattainment
3	PA	Philadelphia	3,944	16,861	55,011	50,439	3,506	2,116	1,200	14.0	Nonattainment
3	PA	Delaware	3,173	24,882	33,259	19,071	903	1,458	1,225	11.1	Nonattainment
3	PA	Montgomery	3,910	8,721	21,191	32,545	1,293	1,905	1,700	8.7	Nonattainment
3	PA	Chester	3,716	11,391	16,909	17,697	2,267	1,228	2,226	6.9	Nonattainment
3	PA	Bucks	3,100	6,870	16,852	23,024	1,124	1,443	1,444	6.8	Nonattainment
2	NJ	Gloucester	1,909	9,154	21,849	15,087	741	1,035	697	6.5	Nonattainment
2	NJ	Camden	2,151	4,120	17,025	20,904	887	1,286	727	5.9	Nonattainment
2	NJ	Burlington	2,298	2,330	15,113	18,139	913	1,326	836	5.6	Nonattainment
2	NJ	Cape May	2,157	14,578	7,894	11,886	206	938	1,044	5.5	Attainment
2	NJ	Atlantic	1,404	1,905	8,676	11,906	437	773	563	3.3	Attainment
2	NJ	Cumberland	1,374	1,941	7,054	9,279	423	638	669	2.8	Attainment
2	NJ	Salem	1,243	4,485	5,457	8,229	534	487	653	2.6	Attainment
3	MD	Cecil	950	948	5,502	4,441	505	401	518	1.8	Attainment

SUMMARY OF FACTOR 2: AIR QUALITY PHILADELPHIA MSA								
** Counties Listed by Highest DV **								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	PA	Philadelphia	16.4	NA	16.8	NA	16.6	NA
3	DE	New Castle	16.2	NA	16.5	NA	16.6	NA
3	PA	Delaware	15.6	NA	15.7	NA	15.0	a
3	PA	Chester	15.1	na	14.6	a		
2	NJ	Camden	14.6	a	14.8	a	14.6	a
3	PA	Bucks	14.6	A	14.3	a	13.4	a
3	PA	Montgomery	14.3	A	14.2	A	13.8	a
2	NJ	Gloucester	13.8	a	14.2	A	14.3	a
3	MD	Cecil	13.0	a	13.4	A	12.5	a
2	NJ	Atlantic	11.6	a	11.4	a	11.2	a
2	NJ	Burlington	No Monitor					
2	NJ	Cape May	No Monitor					
2	NJ	Cumberland	No Monitor					
2	NJ	Salem	No Monitor					

SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION PHILADELPHIA, PA MSA						
Counties Listed Highest to Lowest Population						
EPA Reg	ST	COUNTY	Population & Area			PM2.5 Designation
			2002	Area (sq miles)	Density '02	
3	PA	Philadelphia	1,492,231	135	11,054	Nonattainment
3	PA	Montgomery	766,517	483	1,587	Nonattainment
3	PA	Bucks	610,440	608	1,004	Nonattainment
3	PA	Delaware	553,435	184	3,008	Nonattainment
3	DE	New Castle	512,370	426	1,203	Nonattainment
2	NJ	Camden	511,957	222	2,306	Nonattainment
3	PA	Chester	450,160	756	595	Nonattainment
2	NJ	Burlington	437,871	805	544	Nonattainment
2	NJ	Gloucester	262,049	325	806	Nonattainment
2	NJ	Atlantic	259,423	561	462	Attainment
2	NJ	Cumberland	147,768	489	302	Attainment
2	NJ	Cape May	102,013	255	400	Attainment
3	MD	Cecil	90,335	348	260	Attainment
2	NJ	Salem	64,438	338	191	Attainment

SUMMARY FACTOR 4: COMMUTING PATTERNS PHILADELPHIA, PA MSA						
Counties Listed Highest to Lowest Number of Commuters						
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		PM2.5 Designation
			2002	Percent	Number	
3	PA	Philadelphia	10,213	23	129,902	Nonattainment
3	PA	Montgomery	4,677	32	120,472	Nonattainment
3	PA	Delaware	3,513	44	111,594	Nonattainment
2	NJ	Camden	4,332	43	98,432	Nonattainment
3	PA	Bucks	3,830	31	93,563	Nonattainment
3	PA	Chester	3,128	32	70,486	Nonattainment
2	NJ	Gloucester	2,312	51	62,141	Nonattainment
2	NJ	Burlington	3,748	29	60,278	Nonattainment
3	DE	New Castle	4,957	11	27,598	Nonattainment
3	MD	Cecil	1,340	39	16,195	Attainment
2	NJ	Atlantic	2,236	13	14,237	Attainment
2	NJ	Salem	734	48	13,922	Attainment
2	NJ	Cumberland	1,166	22	12,911	Attainment
2	NJ	Cape May	749	26	11,360	Attainment

SUMMARY FACTOR 5: EXPECTED GROWTH PHILADELPHIA, PA MSA								
Counties Listed Highest to Lowest Growth Rate								
EPA Reg	ST	COUNTY	Population			VMT		PM2.5 Designation
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10	
3	MD	Cecil	90,335	14,604	20	60	4	Attainment
3	PA	Chester	450,160	57,105	15	785	25	Nonattainment
3	DE	New Castle	512,370	58,319	13	1,273	26	Nonattainment
2	NJ	Atlantic	259,423	28,225	13	805	36	Nonattainment
2	NJ	Gloucester	262,049	24,591	11	262	11	Nonattainment
3	PA	Montgomery	766,517	71,986	11	1,344	29	Nonattainment
3	PA	Bucks	610,440	56,461	10	957	25	Nonattainment
2	NJ	Cape May	102,013	7,237	8	179	24	Nonattainment
2	NJ	Burlington	437,871	28,328	7	388	10	Nonattainment
2	NJ	Cumberland	147,768	8,385	6	227	19	Attainment
2	NJ	Camden	511,957	6,108	1	782	18	Attainment
3	PA	Delaware	553,435	3,213	1	1,022	29	Attainment
2	NJ	Salem	64,438	-1,009	-2	139	19	Attainment
3	PA	Philadelphia	1,492,231	-68,027	-4	2,763	27	Nonattainment

Factor 8: Jurisdictional Boundaries

The Philadelphia MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard. Delaware has provided information supporting a designation as a separate area. Based on EPA guidance issued April 1, 2003, EPA intends to designate New Castle County with the Philadelphia MSA.

Factor 9: Level of Control of emission sources

There are many sources in the metropolitan area; the level of control of sources was not a significant issue.

6.3.2 EPA 9-Factor Analyses for the District of Columbia for the Designation of Nonattainment Areas for PM_{2.5}

Enclosure A

The fourth column of the following table identifies the individual counties and cities that EPA intends to designate as nonattainment.

Area	Washington DC MSA in 1999 Metropolitan Statistical Area	District of Columbia/Maryland/Virginia Recommendations	EPA Designating Nonattainment
Washington, DC MSA (Part of the Washington-Baltimore CMSA)	District of Columbia	District of Columbia	District of Columbia
Maryland portion of the Washington DC MSA	Calvert Charles Frederick Montgomery Prince Georges	Prince Georges	Charles Frederick Montgomery Prince Georges
Virginia portion of the Washington DC MSA	Alexandria (City) Arlington Clarke Culpeper Fairfax Fairfax (City) Falls Church (City) Fauquier Fredericksburg King George Loudoun Manassas (City) Manassas Park (City) Prince William Spotsylvania Stafford Warren	None Recommended	Arlington Alexandria (City) Fairfax Fairfax (City) Falls Church (City) Loudoun Manassas (City) Manassas Park (City) Prince William
Total Number of Areas	23	2	14

Enclosure B

Washington DC Area

State Summary

Washington DC's recommendation was submitted on February 13, 2004, by Mayor Anthony Williams. Washington DC recommended that the entire MSA be designated as nonattainment.

Discussion

The Baltimore-Washington CMSA has been split into three smaller MSA areas for planning purposes and for consistency with the 8-hour ozone designations. The Washington DC MSA is comprised of 23 areas: 5 in Maryland, 17 in Virginia, and the District of Columbia. Washington DC and Prince Georges County in Maryland have monitored violations of the fine particulate (PM_{2.5}) standard of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Washington DC MSA is considered a presumptive nonattainment area. The Washington DC monitor is intended to be used as the Design Value monitor for this MSA.

EPA's recommendations for the Maryland and Virginia portions of the MSA are summarized in the above table.

Summary of Evaluation

EPA agrees with Washington DC's recommendation of nonattainment for the District based on the air quality data for the years 2001-2003.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating the District of Columbia as part of the Washington DC nonattainment area.

6.3.3 EPA 9-Factor Analyses for Maryland for the Designation of Nonattainment Areas for PM_{2.5}

The fourth column of the following table identifies the counties within Maryland that EPA intends to designate as nonattainment.

Area	Maryland Counties in 1999 Metropolitan Statistical Area	State of Maryland Recommendation	EPA Designating Nonattainment
Baltimore MSA (Part of Washington-Baltimore CMSA)	Anne Arundel Baltimore City Baltimore Carroll Harford Howard Queen Anne's	Anne Arundel Baltimore City Baltimore	Anne Arundel Baltimore City Baltimore Carroll Harford Howard
Washington DC MSA (Part of Washington- Baltimore CMSA)	Calvert Charles Frederick Montgomery Prince Georges	Prince Georges	Charles Frederick Montgomery Prince Georges
Hagerstown-Martinsburg *	Washington (Also Berkeley, WV and Morgan, WV)	None	Washington
Total number of areas in Maryland	13	4	11

* Washington County was included as part of the Hagerstown-Martinsburg 2003 CBSA.

Enclosure B

State Summary

Governor Robert Ehrlich, Jr. submitted Maryland's initial recommendation on February 23, 2004. The submission identified two options for designation. The first option recommended 14 counties as nonattainment and 10 counties as attainment, consistent with the ozone nonattainment areas. The second option recommended only four nonattainment areas. Maryland's subsequent letter of May 28, 2004, from Thomas Snyder, recommended Option 2 as the State's preferred option.

Based on the air quality data for the years 2001-2003, there are three presumptive fine particulate (PM_{2.5}) nonattainment areas consisting of 13 counties in Maryland. EPA agrees with Maryland's recommended designation of attainment for the Cecil County portion of the Philadelphia CMSA. However, in addition to the four counties the State has recommended to be designated as nonattainment, EPA recommends that three additional counties in the Baltimore MSA, three additional counties in the Washington DC MSA, and one additional county in the Hagerstown-Martinsburg CBSA also be designated as nonattainment. The following discussion provides EPA's rationale for considering the modification to Maryland's recommendation.

6.3.3.1 Philadelphia Area

Discussion

Cecil County is part of the Philadelphia Area presumptive nonattainment area. Maryland's revised recommendation for the Philadelphia CMSA included Cecil County as attainment for the PM_{2.5} standard.

Summary of Evaluation

Cecil County has monitored attainment of 13.0 $\mu\text{g}/\text{m}^3$ compared to the National Ambient Air Quality Standard of 15.0 $\mu\text{g}/\text{m}^3$. A review of the remaining factors indicates that the county is well below the other counties of the Philadelphia Area, and provides sufficient evidence to modify the nonattainment boundary to exclude Cecil County.

PHILADELPHIA, PA MSA					
Status of Counties: Alphabetical by State					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	DE	New Castle	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	MD	Cecil	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Atlantic	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Burlington	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Camden	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cape May	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cumberland	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Gloucester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Salem	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Bucks	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD

3	PA	Chester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Delaware	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Montgomery	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Philadelphia	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD

**SUMMARY OF FACTOR 1: EMISSIONS
PHILADELPHIA, PA MSA**

**** Counties Listed by Percent Contribution to area ****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor	PM _{2.5} Designation
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal		
3	DE	New Castle	4,558	61,499	34,640	24,088	2,605	2,276	1,645	18.6	Nonattainment
3	PA	Philadelphia	3,944	16,861	55,011	50,439	3,506	2,116	1,200	14.0	Nonattainment
3	PA	Delaware	3,173	24,882	33,259	19,071	903	1,458	1,225	11.1	Nonattainment
3	PA	Montgomery	3,910	8,721	21,191	32,545	1,293	1,905	1,700	8.7	Nonattainment
3	PA	Chester	3,716	11,391	16,909	17,697	2,267	1,228	2,226	6.9	Nonattainment
3	PA	Bucks	3,100	6,870	16,852	23,024	1,124	1,443	1,444	6.8	Nonattainment
2	NJ	Gloucester	1,909	9,154	21,849	15,087	741	1,035	697	6.5	Nonattainment
2	NJ	Camden	2,151	4,120	17,025	20,904	887	1,286	727	5.9	Nonattainment
2	NJ	Burlington	2,298	2,330	15,113	18,139	913	1,326	836	5.6	Nonattainment
2	NJ	Cape May	2,157	14,578	7,894	11,886	206	938	1,044	5.5	Attainment
2	NJ	Atlantic	1,404	1,905	8,676	11,906	437	773	563	3.3	Attainment
2	NJ	Cumberland	1,374	1,941	7,054	9,279	423	638	669	2.8	Attainment
2	NJ	Salem	1,243	4,485	5,457	8,229	534	487	653	2.6	Attainment
3	MD	Cecil	950	948	5,502	4,441	505	401	518	1.8	Attainment

SUMMARY OF FACTOR 2: AIR QUALITY PHILADELPHIA MSA

**** Counties Listed by Highest DV ****

EPA Reg	ST	COUNTY	Design Values						PM2.5 Designation
			'01-'03		'00-'02		'99-'01		
3	PA	Philadelphia	16.4	NA	16.8	NA	16.6	NA	Nonattainment
3	DE	New Castle	16.2	NA	16.5	NA	16.6	NA	Nonattainment
3	PA	Delaware	15.6	NA	15.7	NA	15.0	a	Nonattainment
3	PA	Chester	15.1	na	14.6	a			Nonattainment
2	NJ	Camden	14.6	a	14.8	a	14.6	a	Nonattainment
3	PA	Bucks	14.6	A	14.3	a	13.4	a	Nonattainment
3	PA	Montgomery	14.3	A	14.2	A	13.8	a	Nonattainment
2	NJ	Gloucester	13.8	a	14.2	A	14.3	a	Nonattainment
3	MD	Cecil	13.0	a	13.4	A	12.5	a	Attainment
2	NJ	Atlantic	11.6	a	11.4	a	11.2	a	Attainment
2	NJ	Burlington	No Monitor						Nonattainment
2	NJ	Cape May	No Monitor						Attainment
2	NJ	Cumberland	No Monitor						Attainment
2	NJ	Salem	No Monitor						Attainment

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION
PHILADELPHIA, PA MSA**

Counties Listed Highest to Lowest Population

EPA Reg	ST	COUNTY	Population & Area			PM2.5 Designation
			2002	Area (sq miles)	Density '02	
3	PA	Philadelphia	1,492,231	135	11,054	Nonattainment
3	PA	Montgomery	766,517	483	1,587	Nonattainment
3	PA	Bucks	610,440	608	1,004	Nonattainment
3	PA	Delaware	553,435	184	3,008	Nonattainment
3	DE	New Castle	512,370	426	1,203	Nonattainment
2	NJ	Camden	511,957	222	2,306	Nonattainment
3	PA	Chester	450,160	756	595	Nonattainment
2	NJ	Burlington	437,871	805	544	Nonattainment
2	NJ	Gloucester	262,049	325	806	Nonattainment
2	NJ	Atlantic	259,423	561	462	Attainment
2	NJ	Cumberland	147,768	489	302	Attainment
2	NJ	Cape May	102,013	255	400	Attainment
3	MD	Cecil	90,335	348	260	Attainment
2	NJ	Salem	64,438	338	191	Attainment

**SUMMARY FACTOR 4: COMMUTING PATTERNS
PHILADELPHIA, PA MSA**

Counties Listed Highest to Lowest Number of Commuters

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		PM _{2.5} Designation
			2002	Percent	Number	
3	PA	Philadelphia	10,213	23	129,902	Nonattainment
3	PA	Montgomery	4,677	32	120,472	Nonattainment
3	PA	Delaware	3,513	44	111,594	Nonattainment
2	NJ	Camden	4,332	43	98,432	Nonattainment
3	PA	Bucks	3,830	31	93,563	Nonattainment
3	PA	Chester	3,128	32	70,486	Nonattainment
2	NJ	Gloucester	2,312	51	62,141	Nonattainment
2	NJ	Burlington	3,748	29	60,278	Nonattainment
3	DE	New Castle	4,957	11	27,598	Nonattainment
3	MD	Cecil	1,340	39	16,195	Attainment
2	NJ	Atlantic	2,236	13	14,237	Attainment
2	NJ	Salem	734	48	13,922	Attainment
2	NJ	Cumberland	1,166	22	12,911	Attainment
2	NJ	Cape May	749	26	11,360	Attainment

SUMMARY FACTOR 5: EXPECTED GROWTH PHILADELPHIA, PA MSA								
Counties Listed Highest to Lowest Growth Rate								
EPA Reg	ST	COUNTY	Population			VMT		PM2.5 Designation
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10	
3	MD	Cecil	90,335	14,604	20	60	4	Attainment
3	PA	Chester	450,160	57,105	15	785	25	Nonattainment
3	DE	New Castle	512,370	58,319	13	1,273	26	Nonattainment
2	NJ	Atlantic	259,423	28,225	13	805	36	Nonattainment
2	NJ	Gloucester	262,049	24,591	11	262	11	Nonattainment
3	PA	Montgomery	766,517	71,986	11	1,344	29	Nonattainment
3	PA	Bucks	610,440	56,461	10	957	25	Nonattainment
2	NJ	Cape May	102,013	7,237	8	179	24	Nonattainment
2	NJ	Burlington	437,871	28,328	7	388	10	Nonattainment
2	NJ	Cumberland	147,768	8,385	6	227	19	Attainment
2	NJ	Camden	511,957	6,108	1	782	18	Attainment
3	PA	Delaware	553,435	3,213	1	1,022	29	Attainment
2	NJ	Salem	64,438	-1,009	-2	139	19	Attainment
3	PA	Philadelphia	1,492,231	-68,027	-4	2,763	27	Nonattainment

Factor 8: Jurisdictional Boundaries

The entire Philadelphia MSA has recently been designated nonattainment for the 8-hour ozone standard. Cecil County was included with the Philadelphia MSA in the ozone designation.

Factor 9: Level of Control of emission sources

EPA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Cecil County is not a significant contributor to the Philadelphia nonattainment area. Therefore, EPA is designating Cecil County, MD as attainment.

6.3.3.2 Baltimore Area

Discussion

The Baltimore Metropolitan Statistical Area (MSA) is part of the Washington DC Consolidated Metropolitan Statistical Area (CMSA). Because of the large size of the CMSA, it has been split into three smaller areas to be more consistent with the ozone designations and to facilitate planning in the areas. Maryland has recommended that the smaller MSA be the basis for the Maryland designations.

The Baltimore MSA is comprised of 6 counties and one city: Anne Arundel, Baltimore (City), Baltimore, Carroll, Harford, Howard, and Queen Anne's. Baltimore County, Anne Arundel County, and Baltimore City have monitored violations of the fine particulate (PM_{2.5}) standard of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Baltimore MSA is considered a presumptive nonattainment area. The Baltimore City monitor is intended to be used as the Design Value monitor for this MSA.

Maryland's revised recommendation included only Anne Arundel, Baltimore, and Baltimore (City) as nonattainment.

Summary of Evaluation

EPA reviewed the 9 factors for the counties within the Metropolitan area as well as counties adjacent to the Metropolitan area in order to determine the appropriate nonattainment area. Based on analysis of the factors, EPA agrees with the State's recommendation that Queen Anne's be designated as attainment, and excluded from the presumptive nonattainment area. EPA also agrees with the State that Anne Arundel, Baltimore and Baltimore (City) should be designated as nonattainment; however, EPA intends to designate three additional counties as nonattainment: Carroll, Harford, and Howard.

Carroll and Howard counties have low to moderate emissions, and Harford has monitored attainment for 2001 -2003 (13.1 $\mu\text{g}/\text{m}^3$). However, these counties have significant population and are the areas showing the highest population growth in the MSA. They also have high commuting into other areas of the metropolitan area. The combined factor analysis shows the potential for these counties to contribute to nonattainment of the area, thus EPA intends to designate them as nonattainment.

Carroll, Harford, and Howard have recently been designated as nonattainment for 8-hour ozone.

SUMMARY OF BALTIMORE, MD MSA/ PART OF WASHINGTON DC CMSA					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	MD	Anne Arundel	Nonattainment	Nonattainment	Baltimore, MD
3	MD	Baltimore	Nonattainment	Nonattainment	Baltimore, MD
3	MD	Baltimore (City)	Nonattainment	Nonattainment	Baltimore, MD
3	MD	Carroll	Attainment	Nonattainment	Baltimore, MD
3	MD	Harford	Attainment	Nonattainment	Baltimore, MD
3	MD	Howard	Attainment	Nonattainment	Baltimore, MD
3	MD	Queen Annes	Attainment	Attainment	Baltimore, MD

SUMMARY OF FACTOR 1: EMISSIONS BALTIMORE, MD MSA										
** Counties Listed by Percent Contribution to area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor/ CMSA
			PM	SO ₂	NOx	VOC	Amm	Carbon	Crustal	
3	MD	Baltimore	8,510	42,719	43,464	26,217	1,607	3,370	3,935	11.8
3	MD	Anne Arundel	5,572	71,439	36,715	18,182	962	2,228	2,715	9.4
3	MD	Baltimore (City)	2,446	10,686	34,810	21,256	1,581	1,473	726	4.8
3	MD	Carroll	2,563	3,266	12,165	6,312	1,776	754	1,517	2.5
3	MD	Harford	1,517	1,946	8,662	8,606	1,008	754	705	2.4
3	MD	Howard	1,179	2,702	9,987	9,467	435	776	361	2.4
3	MD	Queen Annes	879	428	2,149	2,636	1,128	289	572	0.9

SUMMARY OF FACTOR 2: AIR QUALITY BALTIMORE MSA								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	MD	Anne Arundel	15.4	NA	15.8	NA	15.9	na
3	MD	Baltimore	15.3	NA	15.1	NA	16.0	na
3	MD	Baltimore (City)	16.7	NA	17.0	NA	17.8	NA
3	MD	Carroll	No Monitor					
3	MD	Harford	13.1	a	14.0	a	14.5	a
3	MD	Howard	No Monitor					
3	MD	Queen Annes	No Monitor					

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION
BALTIMORE, MD MSA**

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	MD	Anne Arundel	508,388	416	1,210
3	MD	Baltimore	638,614	599	1,286
3	MD	Baltimore (City)	770,298	81	7,884
3	MD	Carroll	159,025	449	354
3	MD	Harford	227,713	440	518
3	MD	Howard	260,117	252	1,032
3	MD	Queen Annes	42,835	372	115

**SUMMARY FACTOR 4: COMMUTING PATTERNS
BALTIMORE, MD MSA**

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	MD	Anne Arundel	4,394	43	108,856
3	MD	Baltimore	6,912	46	172,129
3	MD	Baltimore (City)	6,707	37	92,988
3	MD	Carroll	1,614	53	41,060
3	MD	Harford	2,208	44	49,021
3	MD	Howard	2,184	61	82,322
3	MD	Queen Annes	514	42	8,681

SUMMARY FACTOR 5: EXPECTED GROWTH BALTIMORE, MD MSA							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	MD	Anne Arundel	503,388	62,417	15	751	17
3	MD	Baltimore	770,298	62,158	9	1,448	21
3	MD	Baltimore (City)	638,614	-84,860	-12	1,651	25
3	MD	Carroll	159,025	27,525	22	134	8
3	MD	Harford	227,713	36,458	20	-28	-1
3	MD	Howard	260,117	60,514	32	211	10
3	MD	Queen Annes	42,835	6,610	19	171	33

Factors 6, 7, 8 and 9 are addressed together with the Washington DC MSA below.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Anne Arundel, Baltimore City, Baltimore, Carroll, Harford and Howard counties as nonattainment as the Baltimore nonattainment area.

6.3.3.3 Washington DC Area

Discussion

As noted above, the Washington DC MSA has been split from the larger Baltimore-Washington CMSA for planning purposes and for consistency with the 8-hour ozone designations.

The Washington DC MSA is comprised of 23 areas, five of which are located in Maryland. These counties are: Calvert, Charles, Frederick, Montgomery, and Prince Georges. Washington DC and Prince Georges County have monitored violations of the fine particulate (PM_{2.5}) standard of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Washington DC MSA is considered a presumptive nonattainment area. The Washington DC monitor is intended to be used as the Design Value monitor for this MSA.

Maryland's revised recommendation for the Washington DC MSA included only Prince Georges County as nonattainment.

Summary of Evaluation

EPA reviewed the 9 factors for the counties within the Metropolitan area as well as counties adjacent to the Metropolitan area in order to determine the appropriate nonattainment area. EPA agrees with the State that Calvert County should be designated as attainment. Based on weighted emissions screening, this county has a fairly low contribution to the nonattainment area and

should be excluded from the presumptive nonattainment area. The low levels of the other factors further support this. EPA agrees with the State that Prince Georges should be designated as nonattainment.

EPA also intends to recommend that three additional counties be designated as nonattainment: Charles, Frederick, and Montgomery. Charles County has emissions associated with the Chalk Point Power Plant, and along with Frederick, has population and commuting levels that contribute to nonattainment in the MSA. Montgomery County has high population and high commuting levels into the metropolitan area, and has the highest VMT growth in the MSA. The combined factor analysis of these three areas indicates contribution to nonattainment of the MSA.

SUMMARY OF WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	DC	Washington	Nonattainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Calvert	Attainment	Attainment	Washington, DC-MD-VA-WV
3	MD	Charles	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Frederick	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Montgomery	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Prince Georges	Nonattainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Washington	Attainment	Nonattainment	Hagerstown-Martinsburg
3	VA	Alexandria	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Arlington	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Clarke	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Culpeper	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Fairfax	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Fairfax (City)	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Falls Church	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Fauquier	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Fredericksburg	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	King George	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Loudoun	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Manassas	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Manassas Park	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Prince William	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Spotsylvania	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Stafford	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Warren	Attainment	Attainment	Washington, DC-MD-VA-WV
3	WV	Berkeley	Nonattainment	Nonattainment	Hagerstown-Martinsburg**
3	WV	Jefferson	Attainment	Attainment	Washington, DC-MD-VA-WV
**Note: Berkeley County in West Virginia and Washington County in Maryland are included in the Washington MSA; However, due to existing planning boundaries, Berkeley and Washington will be designated nonattainment in the Hagerstown-Martinsburg Area (2003 CBSA)					

SUMMARY OF FACTOR 1: EMISSIONS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA
**** Counties Listed by Percent Contribution to area****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor DC C/MSA
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal	
3	MD	Montgomery	7,414	41,024	32,890	30,424	1,108	3,478	3,254	12.0
3	MD	Prince Georges	6,880	44,813	34,698	24,878	1,122	3,083	2,918	11.0
3	MD	Charles	7,916	79,120	20,928	5,146	204	1,974	4,773	9.0
3	VA	Fairfax	3,213	3,428	33,000	37,533	1,172	2,201	877	6.8
3	MD	Frederick	2,523	10,114	12,701	8,765	2,270	988	1,347	3.4
3	MD	Washington	1,822	6,256	13,064	7,379	1,556	713	938	3.2
3	VA	Prince William	1,942	22,555	16,359	10,150	528	817	881	3.3
3	DC	Washington	1,839	8,200	14,823	17,750	1,398	895	767	3.0
3	WV	Berkeley	1,390	2,554	9,099	4,303	319	558	738	1.8
3	VA	Spotsylvania	864	296	4,278	4,625	223	525	316	1.6
3	VA	Alexandria	996	15,627	10,693	4,378	280	305	552	1.5
3	VA	Loudoun	1,286	530	5,987	6,381	518	466	787	1.5
3	VA	Stafford	889	359	5,562	4,591	204	485	378	1.5
3	VA	Arlington	577	748	7,460	6,753	1,160	408	139	1.3
3	MD	Calvert	870	647	3,146	3,342	153	377	465	1.2
3	VA	Fauquier	830	239	4,082	3,711	935	401	409	1.2
3	WV	Jefferson	758	906	2,918	2,105	321	255	488	0.8
3	VA	Culpeper	488	143	1,818	2,133	441	216	243	0.7
3	VA	Warren	345	160	2,441	2,299	190	194	140	0.6
3	VA	Clarke	228	68	760	927	230	95	126	0.3
3	VA	King George	263	514	1,436	942	107	106	141	0.3
3	VA	Manassas	155	52	944	1,021	26	82	60	0.3
3	VA	Fairfax (City)	113	39	417	941	28	56	55	0.2
3	VA	Fredericksburg	83	108	1,383	1,300	40	55	22	0.2
3	VA	Falls Church	59	17	250	580	9	36	20	0.1
3	VA	Manassas Park	23	11	247	236	5	13	9	0.0

SUMMARY OF FACTOR 2: AIR QUALITY '01-'03 MSA Design Value = 16.3									
Counties Sorted by Highest to Lowest Monitored or Estimated Value									
EPA Reg	ST	COUNTY	Design Values						
			'01-'03		'00-'02		'99-'01		
3	MD	Prince Georges	17.7	na	17.4	NA	17.3	na	
3	WV	Berkeley	16.3	NA	16.2	NA	16.0	NA	
3	DC	Washington	15.8	NA	16.4	NA	16.6	NA	
3	VA	Arlington	14.6	A	14.9	A	14.5	a	
3	MD	Washington	14.0	A	14.8	A	13.5	a	
3	VA	Fairfax	14.1	A	13.9	A	14.6	a	
3	VA	Loudoun	13.6	A	13.8	A	13.6	a	
3	MD	Montgomery	12.6	A	13.4	A	13.5	a	
3	WV	Jefferson	No monitor						
3	MD	Frederick	No monitor						
3	VA	Alexandria	No monitor						
3	VA	Clarke	No monitor						
3	VA	Fauquier	No monitor						
3	MD	Charles	No monitor						
3	VA	Prince William	No monitor						
3	VA	Warren	No monitor						
3	MD	Calvert	No monitor						
3	VA	King George	No monitor						
3	VA	Stafford	No monitor						
3	VA	Spotsylvania	No monitor						
3	VA	Culpeper	No monitor						
3	VA	Fairfax (City)	No monitor						
3	VA	Falls Church	No monitor						
3	VA	Fredericksburg	No monitor						
3	VA	Manassas	No monitor						
3	VA	Manassas Park	No monitor						

SUMMARY OF FACTOR 3A: POPULATION DENSITY AND DEGREE OF URBANIZATION

WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA
Counties sorted by highest to lowest Actual Population

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	VA	Fairfax	997,580	396	2519
3	MD	Montgomery	910,156	495	1839
3	MD	Prince Georges	833,084	486	1,714
3	DC	Washington	570,898	61	9,359
3	VA	Prince William	311,892	338	923
3	MD	Frederick	209,125	663	315
3	VA	Loudoun	204,054	520	392
3	VA	Arlington	189,927	26	7305
3	MD	Washington	134,246	458	293
3	VA	Alexandria	130,804	15	8720
3	MD	Charles	129,040	461	280
3	VA	Stafford	104,823	270	388
3	VA	Spotsylvania	102,570	401	256
3	WV	Berkeley	81,262	321	253
3	MD	Calvert	80,906	215	376
3	VA	Fauquier	59,245	650	91
3	WV	Jefferson	44,926	210	214
3	VA	Manassas	37,288	10	3729
3	VA	Culpeper	36,893	381	97
3	VA	Warren	32,910	214	154
3	VA	Fairfax (City)	22,055	6	3,676
3	VA	Fredericksburg	20,076	11	1,825
3	VA	King George	17,657	180	98
3	VA	Clarke	13,290	177	75
3	VA	Manassas Park	10,909	2	5,455
3	VA	Falls Church	10,659	2	5,330

SUMMARY OF FACTOR 3B: POPULATION DENSITY/ DEGREE OF URBANIZATION
Counties sorted by highest to lowest Population Density

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	DC	Washington	570,898	61	9,359
3	VA	Alexandria	130,804	15	8,720
3	VA	Arlington	189,927	26	7,305
3	VA	Manassas Park	10,909	2	5,455
3	VA	Falls Church	10,659	2	5,330
3	VA	Manassas	37,288	10	3,729
3	VA	Fairfax (City)	22,055	6	3,676
3	VA	Fairfax	997,580	396	2,519
3	MD	Montgomery	910,156	495	1,839
3	VA	Fredericksburg	20,076	11	1,825
3	MD	Prince Georges	833,084	486	1,714
3	VA	Prince William	311,892	338	923
3	VA	Loudoun	204,054	520	392
3	VA	Stafford	104,823	270	388
3	MD	Calvert	80,906	215	376
3	MD	Frederick	209,125	663	315
3	MD	Washington	134,246	458	293
3	MD	Charles	129,040	461	280
3	VA	Spotsylvania	102,570	401	256
3	WV	Berkeley	81,262	321	253
3	WV	Jefferson	44,926	210	214
3	VA	Warren	32,910	214	154
3	VA	King George	17,657	180	98
3	VA	Culpeper	36,893	381	97
3	VA	Fauquier	59,245	650	91
3	VA	Clarke	13,290	177	75

SUMMARY FACTOR 4: COMMUTING PATTERNS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA

Counties sorted by highest VMT

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	VA	Fairfax	10,532	46	242,944
3	MD	Prince Georges	7,120	60	238,274
3	MD	Montgomery	7,398	41	184,513
3	VA	Prince William	2,786	65	98,427
3	VA	Arlington	1,807	69	79,757
3	DC	Washington	3,802	26	67,157
3	VA	Alexandria	978	73	56,449
3	VA	Loudoun	1,431	57	52,719
3	MD	Frederick	2,508	39	40,199
3	MD	Charles	1,006	56	34,316
3	VA	Stafford	1,430	68	33,083
3	VA	Spotsylvania	1,270	57	25,808
3	MD	Calvert	848	50	18,711
3	VA	Fauquier	1,005	56	15,753
3	VA	Manassas	130	75	13,576
3	MD	Washington	2,249	22	13,268
3	WV	Berkeley	852	34	12,098
3	WV	Jefferson	362	51	10,665
3	VA	Fairfax (City)	124	76	9,014
3	VA	Culpeper	405	40	6,393
3	VA	Warren	339	39	6,019
3	VA	Fredericksburg	451	54	5,188
3	VA	Manassas Park	17	89	4,925
3	VA	Falls Church	32	83	4,868
3	VA	King George	263	41	3,329
3	VA	Clarke	252	41	2,701

SUMMARY FACTOR 4: COMMUTING PATTERNS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA

Counties Sorted by Highest Number of Commuters

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	VA	Fairfax	10,532	46	242,944
3	MD	Prince Georges	7,120	60	238,274
3	MD	Montgomery	7,398	41	184,513
3	VA	Prince William	2,786	65	98,427
3	VA	Arlington	1,807	69	79,757
3	DC	Washington	3,802	26	67,157
3	VA	Alexandria	978	73	56,449
3	VA	Loudoun	1,431	57	52,719
3	MD	Frederick	2,508	39	40,199
3	MD	Charles	1,006	56	34,316
3	VA	Stafford	1,430	68	33,083
3	VA	Spotsylvania	1,270	57	25,808
3	MD	Calvert	848	50	18,711
3	VA	Fauquier	1,005	56	15,753
3	VA	Manassas	130	75	13,576
3	MD	Washington	2,249	22	13,268
3	WV	Berkeley	852	34	12,098
3	WV	Jefferson	362	51	10,665
3	VA	Fairfax (City)	124	76	9,014
3	VA	Culpeper	405	40	6,393
3	VA	Warren	339	39	6,019
3	VA	Fredericksburg	451	54	5,188
3	VA	Manassas Park	17	89	4,925
3	VA	Falls Church	32	83	4,868
3	VA	King George	263	41	3,329
3	VA	Clarke	252	41	2,701

SUMMARY FACTOR 5: EXPECTED GROWTH WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA							
Counties Sorted by Highest Growth Rate							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	VA	Loudoun	204,054	83,470	97	-217	-15
3	VA	Spotsylvania	102,570	32,992	57	204	16
3	VA	Manassas Park	10,909	3,556	53		
3	VA	Stafford	104,823	31,210	51	-225	-16
3	MD	Calvert	80,906	23,191	45	144	17
3	VA	Prince William	311,892	65,127	30	999	36
3	MD	Frederick	209,125	45,069	30	-311	-12
3	WV	Berkeley	81,262	16,652	28	-111	-13
3	VA	Manassas	37,288	7,178	26		
3	VA	King George	17,657	3,276	24	50	19
3	VA	Culpeper	36,893	6,471	23	46	11
3	VA	Warren	32,910	5,442	21	-1	0
3	MD	Charles	129,040	19,392	19	-77	-8
3	VA	Fairfax	997,580	151,165	18	1,653	16
3	WV	Jefferson	44,926	6,264	17	123	34
3	MD	Montgomery	910,156	116,314	15	2,258	31
3	VA	Alexandria	130,804	17,100	15	649	66
3	VA	Fauquier	59,245	6,398	13	16	2
3	VA	Arlington	189,927	18,517	11	693	38
3	MD	Prince Georges	833,084	72,247	10	2,023	28
3	VA	Fairfax (City)	22,055	1,876	10	163	131
3	MD	Washington	134,246	10530	9	4,754	4
3	VA	Falls Church	10,659	799	8		
3	VA	Clarke	13,290	551	5	-41	-16
3	VA	Fredericksburg	20,076	252	1		
3	DC	Washington	570,898	-34,841	-6	738	19

Factor 8: Jurisdictional Boundaries

The Baltimore-Washington CMSA has recently been designated nonattainment for the 8-hour ozone standard. In those designations, the CMSA was divided along MSA boundaries. These boundaries will also be used for PM2.5 designations. These areas are the Baltimore MSA, the Washington DC MSA, and the Hagerstown-Martinsburg MSA. These three areas are under the jurisdiction of separate planning organizations. The nonattainment boundaries that EPA intends to use will facilitate planning for ozone and PM2.5 by these separate organizations.

Factor 9: Level of Control of emission sources

EPA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Charles, Frederick, Montgomery and Prince Georges counties as nonattainment as the Maryland portion of the Washington, DC nonattainment area.

6.3.3.4 Hagerstown - Martinsburg

Discussion

As noted above, this area is part of the Baltimore-Washington CMSA, which has been split into the smaller MSA areas for planning purposes and for consistency with the 8-hour ozone designations. The Hagerstown-Martinsburg Area is comprised of two counties in West Virginia, and one county in Maryland. Berkeley County in West Virginia has monitored violations of the fine particulate (PM_{2.5}) standard of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Hagerstown-Martinsburg area is considered a presumptive nonattainment area. The Berkeley County monitor is intended to be used as the Design Value monitor for this MSA.

Washington County is part of the Hagerstown-Martinsburg CBSA, as defined by OMB in 2003. In its letter of February 23, 2004, Maryland recommended that Washington County be designated as nonattainment; however, in its revised recommendation of May 28, 2004, Maryland recommended a designation of attainment.

Summary of Evaluation

Washington County has monitored attainment for 2001 -2003 (14.0 $\mu\text{g}/\text{m}^3$). However, weighted emissions screening indicates that this county potentially contributes to the nonattainment area.

Despite low population growth, population is the highest compared to other areas of the CBSA. VMT and VMT growth are also high compared to the other counties in the CBSA. The combined factor analysis indicates potential contribution to the nonattainment area; therefore EPA intends to designate Washington County as nonattainment.

Our analysis of Morgan County shows that it is low in all areas of the combined factor analysis. Allegany County is an adjacent area that has low population, negative growth, and negligible commuting into the CBSA, and was therefore excluded.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Please see tables in Section 6.3.5.1 (Washington, DC area) for specific data on Berkeley and Washington County. After consideration of all information provided, EPA has

determined that the recommendation of June 29, 2004 as described above is still valid. EPA is designating Washington County, MD and Berkeley County, WV as the Hagerstown- Martinsville nonattainment area.

6.3.4 EPA 9-Factor Analyses for Pennsylvania for the Designation of Nonattainment Areas for PM_{2.5}

Enclosure A

The fourth column of the following table identifies the counties in Pennsylvania that EPA intends to designate as nonattainment.

Area	Counties included in the 1999 MSA	Pennsylvania Recommended Nonattainment Counties	Nonattainment Counties
Harrisburg	Cumberland Dauphin Lebanon Perry	Cumberland Dauphin	Cumberland Dauphin Lebanon
Johnstown	Cambria Somerset	Cambria	Cambria Indiana
Lancaster	Lancaster	Lancaster	Lancaster
Philadelphia PA-NJ-DE-MD	Philadelphia Delaware Montgomery Chester Bucks	Philadelphia Delaware Chester	Philadelphia Delaware Montgomery Chester Bucks
Pittsburgh	Allegheny Beaver Westmoreland Washington Butler Fayette	Allegheny Beaver Westmoreland Washington	Allegheny Beaver Butler Westmoreland Washington Armstrong Greene Lawrence
Reading	Berks	Berks	Berks
York	York	York	York
Youngstown, OH	Mahoning, OH Trumbull, OH		Mercer, PA
Total	21	13	22

*We have included in our recommended nonattainment areas counties in your state that are contiguous to a CMSA or MSA with a violating monitor, that are generally rural in character, and that contain an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included these counties in our initial recommendations in order to ensure that a sufficient portion of those counties, including

such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of such contiguous counties, encompassing the large facility or facilities, should be designated nonattainment. The county or counties in your state that we have included for this purpose are: Indiana, Armstrong and Greene.

Enclosure B

State Summary

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, 16 counties to be designated nonattainment. On June 2, 2004, Secretary McGinty revised the recommendation to exclude three metropolitan counties: Bucks, Montgomery and Lebanon counties.

Based on the air quality data for the years 2001-2003, there are eight presumptive fine particulate (PM_{2.5}) nonattainment areas consisting of 21 counties in Pennsylvania. EPA agrees with Pennsylvania on the 13 counties recommended to be designated nonattainment. Based on the review of the recommendation as well as the additional information described below, EPA intends to designate nine additional counties as nonattainment: one additional county in the Harrisburg MSA, one additional county in the Johnstown MSA, two additional counties in the Philadelphia CMSA, four additional counties in the Pittsburgh CMSA and one county in the Youngstown, OH MSA. The following discussion provides our rationale for considering the modification to Pennsylvania's recommendation.

6.3.4.1 Harrisburg Area

Discussion

The Harrisburg Metropolitan Statistical Area (MSA) is comprised of four counties: Cumberland, Dauphin, Lebanon and Perry. Two counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Harrisburg MSA is considered a presumptive nonattainment area. Cumberland County has monitored 17.6 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. The data, however, are incomplete at this time so this value will not be used as the Design Value. Dauphin County has monitored 15.8 $\mu\text{g}/\text{m}^3$ for the 2001-2003 time period. The Dauphin County monitor is intended to be used as the Design Value monitor for the Harrisburg nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, three counties to be included in the Harrisburg nonattainment area: Cumberland, Dauphin, and Lebanon. On June 2, 2004, Pennsylvania indicated a revised recommendation including only two counties for this area: Cumberland and Dauphin.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the original recommendation. EPA intends, based on the information reviewed, to

designate three counties as nonattainment in the Harrisburg area: Cumberland, Dauphin, and Lebanon.

Summary of Evaluation

Based on a review of the nine factors, EPA supports Pennsylvania's attainment recommendation for Perry County even though it is part of the presumptive nonattainment area (as described in the April 2003 and February 2004 EPA guidance). As seen in the tables below, Perry County is among the lowest ranking counties in the Harrisburg area, for most of the nine criteria. The county has monitored attainment at $12.0 \text{ } \mu\text{g}/\text{m}^3$. The emissions are very low, when compared with other counties in the area. Considering the meteorology and distance to the monitor, the weighted emissions factor slightly rises; but the emission factor is still one-third of the larger emissions contributing counties in the area. The population and urban density data are among the lowest in the MSA. The commuting data indicates significant commuting, compared to population, but the relative vehicle miles traveled is low. Comparatively, this county is lower in vehicle miles than the other 3 metropolitan counties as well as several of the surrounding attainment counties. Inclusion of the county is not supported by the analysis of the 9 factors. Therefore, EPA intends to designate Perry County, part of the metropolitan area, as attainment/unclassifiable.

In addition to the counties included in the MSA, EPA has reviewed the counties adjacent to the MSA. Berks, Lancaster, and York Counties are adjacent to the MSA and are each single-county MSA's with monitored violations of the $\text{PM}_{2.5}$ NAAQS. The Commonwealth recommended nonattainment for these counties. They will be discussed separately.

The adjacent counties of Franklin, Adams, Schuylkill, Northumberland and Juniata were evaluated for potential contribution to the nonattainment area. Northumberland and Juniata were similar to Perry County ranking very low in all factors. Although the weighted emissions score showed moderate contribution to the area from Franklin, Adams, and Schuylkill, review of the remaining criteria, including an attaining monitor in Adams County, support Pennsylvania's recommendation of attainment. EPA intends, based on this review, not to add any surrounding counties to the Harrisburg MSA nonattainment area.

Lebanon County is part of the Harrisburg metropolitan area. Unlike Perry County, it is located adjacent to several other nonattainment areas. The inclusion of Lebanon County completes a contiguous nonattainment boundary.

A summary of the data that supports the intended designations is provided below.

SUMMARY OF HARRISBURG, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	PM _{2.5} Designation	Area - '99 C/MSA
C/MSA Total (excluding surrounding) = 4 counties					
3	PA	Cumberland	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Dauphin	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lebanon	Attainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Perry	Attainment	Attainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lancaster	Nonattainment	Nonattainment	Lancaster, PA
3	PA	Berks	Nonattainment	Nonattainment	Reading, PA
3	PA	York	Nonattainment	Nonattainment	York, PA
3	PA	Adams	Attainment	Attainment	
3	PA	Franklin	Attainment	Attainment	
3	PA	Juniata	Attainment	Attainment	
3	PA	Northumberland	Attainment	Attainment	
3	PA	Schuylkill	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS HARRISBURG, PA MSA										
** Counties Listed by Percent Contribution to Area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO ₂	NOx	VOC	Amm	Carbon	Crustal	
3	PA	York	7,251	60,065	32,847	22,101	3,029	1,991	4,166	82.8
3	PA	Lancaster	5,673	10,786	20,901	27,383	17,154	1,746	3,569	66.7
3	PA	Berks	4,806	17,143	21,834	21,506	4,133	1,520	2,821	60.8
3	PA	Cumberland	2,638	3,265	14,246	11,526	2,050	1,020	1,393	40.5
3	PA	Dauphin	1,812	4,079	13,425	13,695	1,703	786	913	33.1
3	PA	Franklin	1,827	1,501	6,280	7,423	4,558	591	1,154	22.0
3	PA	Adams	1,608	793	3,645	4,518	2,617	641	901	21.4
3	PA	Schuylkill	1,441	8,390	7,857	7,212	1,311	483	833	20.0
3	PA	Lebanon	1,451	2,758	6,284	6,931	4,593	468	903	18.4
3	PA	Northumberland	1,156	2,004	4,143	6,046	1,229	441	644	16.0
3	PA	Perry	561	647	2,750	1,925	1,709	206	330	8.1
3	PA	Juniata	337	351	1,873	1,314	2,121	123	198	5.0

SUMMARY OF FACTOR 2: AIR QUALITY HARRISBURG MSA								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	PA	Cumberland	17.6	na	15.8	na	15.8	na
3	PA	Dauphin	15.8	NA	15.6	NA	15.5	NA
3	PA	Lebanon	No Monitor					
3	PA	Perry	13.0	A	12.7	A	12.5	a

SUMMARY OF FACTOR 3A: POPULATION Sorted Highest to Lowest						
EPA Reg	ST	County	2002	Area (sq miles)	Density '02	EPA Designation
3	PA	Dauphin	252,933	525	482	Nonattainment
3	PA	Cumberland	217,743	550	396	Nonattainment
3	PA	Schuylkill	148,505	779	191	Attainment
3	PA	Franklin	131,598	772	170	Attainment
3	PA	Lebanon	121,199	362	335	Nonattainment
3	PA	Adams	94,437	520	182	Attainment
3	PA	Northumberland	93,371	460	203	Attainment
3	PA	Perry	43,876	554	79	Attainment
3	PA	Juniata	22,760	392	58	Attainment

SUMMARY OF FACTOR 3B: Population Density Sorted Highest to Lowest						
EPA Reg	ST	County	2002	Area (sq miles)	Density '02	EPA Designation
3	PA	Dauphin	252,933	525	482	Nonattainment
3	PA	Cumberland	217,743	550	396	Nonattainment
3	PA	Lebanon	121,199	362	335	Attainment
3	PA	Northumberland	93,371	460	203	Attainment
3	PA	Schuylkill	148,505	779	191	Nonattainment
3	PA	Adams	94,437	520	182	Attainment
3	PA	Franklin	131,598	772	170	Attainment
3	PA	Perry	43,876	554	79	Attainment
3	PA	Juniata	22,760	392	58	Attainment

Factor 4: Commuting Patterns: Sorted by VMT Highest to Lowest						
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		EPA Designation
			2002	Percent	Number	
3	PA	Dauphin	2,869	16	19,284	Nonattainment
3	PA	Cumberland	2,594	22	23,237	Nonattainment
3	PA	Schuylkill	1,463	6	3,964	Attainment
3	PA	Franklin	1,419	6	3,971	Attainment
3	PA	Lebanon	1,136	24	14,209	Nonattainment
3	PA	Northumberland	797	4	1,802	Attainment
3	PA	Adams	734	6	2,738	Attainment
3	PA	Perry	397	63	13,452	Attainment
3	PA	Juniata	205	26	2,667	Attainment

SUMMARY FACTOR 4B: COMMUTING PATTERNS						
Sorted by Number of Commuters Highest to Lowest						
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		EPA Designation
			2002	Percent	Number	
3	PA	Cumberland	2,594	22	23,237	Nonattainment
3	PA	Dauphin	2,869	16	19,284	Nonattainment
3	PA	Lebanon	1,136	24	14,209	Nonattainment
3	PA	Perry	397	63	13,452	Attainment
3	PA	Franklin	1,419	6	3,971	Attainment
3	PA	Schuylkill	1,463	6	3,964	Attainment
3	PA	Adams	734	6	2,738	Attainment
3	PA	Juniata	205	26	2,667	Attainment
3	PA	Northumberland	797	4	1,802	Attainment

SUMMARY FACTOR 5: EXPECTED GROWTH: HARRISBURG, PA MSA								
EPA Reg	ST	COUNTY	Population			VMT		EPA Designation
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10	
3	PA	Northumberland	93,371	-2,215	-2	-54	-7	Attainment
3	PA	Schuylkill	148,505	-2,249	-1	-139	-10	Attainment
3	PA	Lebanon	252,933	13,985	6	46	4	Nonattainment
3	PA	Perry	121,199	6,583	6	227	57	Attainment
3	PA	Cumberland	635,751	41,415	7	59	2	Nonattainment
3	PA	Franklin	131,598	8,231	7	-94	-7	Attainment
3	PA	Dauphin	217,743	18,417	9	857	30	Nonattainment
3	PA	Juniata	22,760	2,196	11	90	44	Attainment
3	PA	Adams	94,437	13,018	17	213	29	Attainment

Factor 8: Jurisdictional Boundaries

The Harrisburg area has recently been designated nonattainment for the 8-hour ozone standard. Included with the four MSA counties, Franklin, Adams and Perry were included in the ozone nonattainment area. In the ozone review, Franklin County monitored violations of the ozone standard. For fine particulate, there are no monitored violations in the surrounding counties. Lebanon County is part of the Harrisburg metropolitan area. Unlike Perry County, it is located adjacent to several other nonattainment areas. The inclusion of Lebanon County completes a contiguous nonattainment boundary.

Factor 9: Level of Control of emission sources

PA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate. This screening identified a source in Schuylkill County as 37 miles from a violating monitor. The wind and direction analysis, however, confirmed that this source is not significantly contributing to the nonattainment area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Pennsylvania presented additional comments that Lebanon County should not be included. EPA reviewed the information but disagrees. Lebanon County is part of the core metropolitan area. The population density is similar to that of Dauphin and Cumberland Counties. Twenty four percent of the population commutes within the nonattainment area. In addition, the juxtaposition of two nonattainment areas suggests Lebanon County is not only contributing to, but is estimated to have elevated air quality similar to the nonattainment counties in Eastern Pennsylvania. After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Cumberland, Dauphin, and Lebanon Counties as the Harrisburg nonattainment area.

6.3.4.2 Johnstown Area

Discussion

The Johnstown Metropolitan Statistical Area (MSA) is comprised of two counties: Cambria and Somerset. Cambria County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Johnstown MSA is considered a presumptive nonattainment area. Cambria has monitored 15.8 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Johnstown nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Cambria County to be included in the Johnstown nonattainment area.

EPA has reviewed the Commonwealth's recommendations as well as additional data provided on June 1, 2004. EPA agrees with the recommendation of Cambria as nonattainment and Somerset

County as attainment. EPA intends, based on the information reviewed, to designate an adjacent county, Indiana, as nonattainment in the Johnstown area.

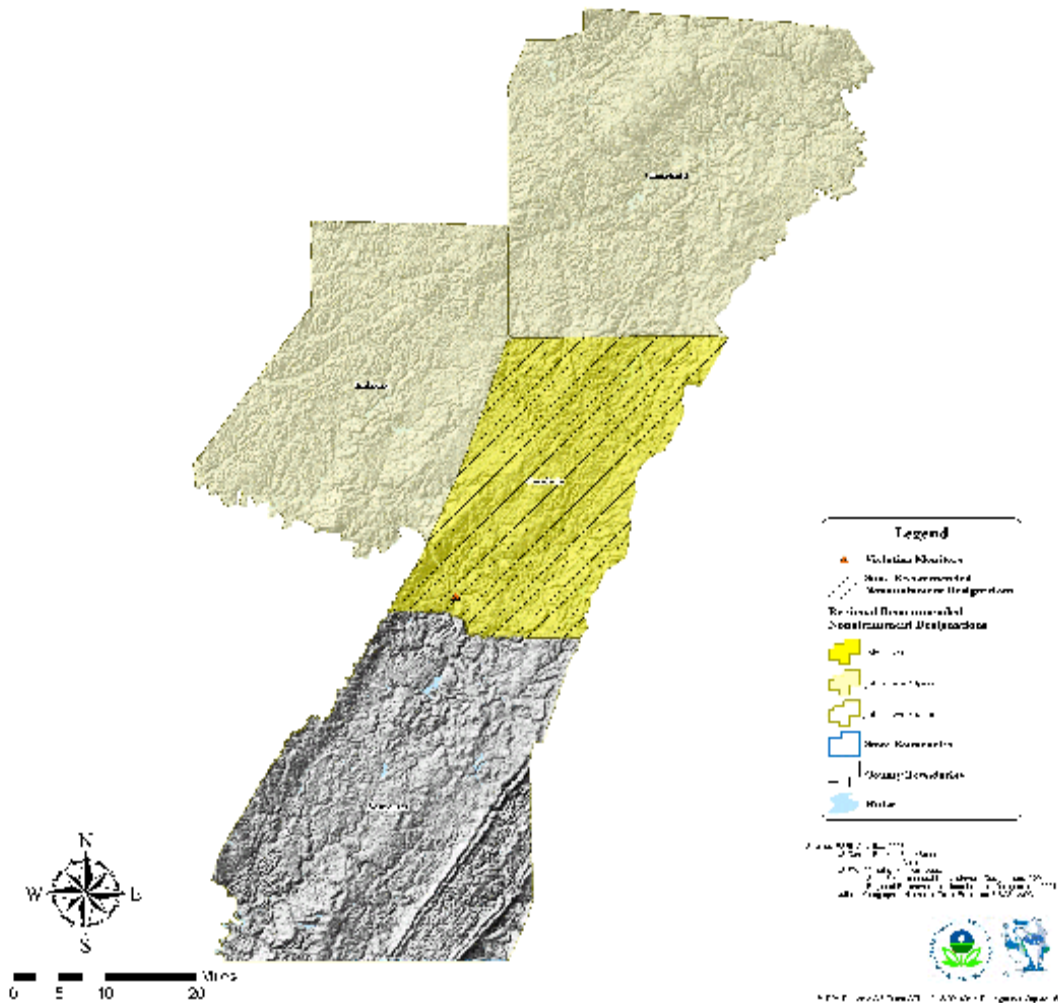
Summary of Evaluation

EPA has identified Somerset County part of the metropolitan area, as well as the adjacent counties of Blair and Bedford Counties in Pennsylvania and Garrett County, MD to have very low contribution from all factors to the metropolitan area. There is sufficient evidence to alter the presumptive boundaries the nonattainment area to exclude Somerset County.

EPA has reviewed the adjacent counties to the Johnstown MSA. There are no distinguishing characteristics for the area when comparing the population density, growth and commuting patterns. Indiana County is adjacent to the MSA and shows a large emissions contribution to the area. Indiana County contributes a comparatively large portion of emissions to the Johnstown area. The disproportionate amount of emissions provides substantial evidence to include Indiana County in the nonattainment area. Moderate emissions contribution from Clearfield County, PA and Allegany County, MD counties suggested possible inclusion, however, the inclusion of these counties is not supported by analysis of the nine factors. The weighted emissions factor, considering meteorology and distance, is less than half the value for Cambria. This difference highlights the significance of geography and meteorology in this designation analysis. Geography and topography, however, provide justification for the intended nonattainment boundaries. The topography of the area isolates the city from inter-urban transport of low-level emissions. Over 34 square miles of mountain upland drains down into the City and then out the deepest river gap in the eastern United States. The city itself is in the approximately two-mile wide flood plane formed by the junction of the Stonycreek and Little Conemaugh Rivers, and the narrow Conemaugh River Gap where water flows out of the City. The Conemaugh River Gap is over 1600 feet deep when measured from the top of Rager Mountain and the level of the river at its outfall from the Gap in Robinson, Indiana County. The basin within which the city lies is about 300 feet below the surrounding ridgelines. The city is effectively isolated from inter-urban transport of low level emissions.

Geography also plays a role. The emissions from the Shawville Power Plant, suggest a moderate emissions contribution from Clearfield County. This plant, however, is located 60 miles, predominantly downwind, from the nearest violating monitor. This distance, along with a low frequency of potential impact, provides additional justification for considering Clearfield attainment. Based on review of the factors, EPA intends to add Indiana County alone to the nonattainment area boundaries.

Johnstown Area PM_{2.5} Recommended Nonattainment Designations



The data supporting the modification to the Pennsylvania recommendation to include Indiana County is provided in the tables below.

SUMMARY OF JOHNSTOWN, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	PM _{2.5} Designation	Area - '99 C/MSA
3	PA	Cambria	Nonattainment	Nonattainment	Johnstown, PA
3	PA	Somerset	Attainment	Attainment	Johnstown, PA
3	MD	Allegany	Attainment	Attainment	Cumberland, MD-WV
3	PA	Bedford	Attainment	Attainment	
3	PA	Blair	Attainment	Attainment	Altoona, PA
3	PA	Clearfield	Attainment	Attainment	
3	MD	Garrett	Attainment	Attainment	
3	PA	Indiana	Attainment	Nonattainment	Adjacent County

** Counties Listed by Percent Contribution to Johnstown MSA **										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
3	PA	Indiana	10,981	158,311	52,550	4,683	692	2,428	6,868	629.7
3	PA	Clearfield	3,466	43,394	11,437	5,124	344	1,000	2,020	111.2
3	PA	Westmoreland	3,320	3,593	18,461	17,371	1,119	1,533	1,564	68.4
3	MD	Allegany	3,041	20,453	12,262	4,991	393	943	1,636	119.5
3	PA	Cambria	1,594	8,716	8,287	7,229	490	679	804	181.5
3	PA	Fayette	1,600	2,053	6,788	6,625	458	641	856	31.6
3	PA	Blair	1,044	4,434	6,395	6,456	1,203	461	523	46.6
3	PA	Somerset	1,139	1,548	4,706	4,769	1,494	415	659	43.9
3	PA	Bedford	730	888	4,869	3,927	1,440	307	389	25.0
3	MD	Garrett	571	709	4,445	2,424	719	275	268	22.2

SUMMARY OF FACTOR 2: AIR QUALITY									
Johnstown, PA MSA									
EPA Reg	ST	COUNTY	Design Values						
			'01-'03		'00-'02		'99-'01		
3	PA	Cambria	15.8	NA	15.8	NA	15.3	NA	NA
3	PA	Somerset	No Monitor						
3	PA	Indiana	No Monitor						
3	PA	Clearfield	No Monitor						

SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION						
JOHNSTOWN, PA MSA						
EPA Reg	ST	COUNTY	Population & Area			PM2.5 Designation
			2002	Area (sq miles)	Density '02	
3	PA	Westmoreland	368,428	1,023	360	Nonattainment
3	PA	Cambria	150,452	688	219	Nonattainment
3	PA	Fayette	146,654	790	186	Attainment
3	PA	Blair	127,840	526	243	Attainment
3	PA	Indiana	88,780	830	107	Nonattainment
3	PA	Clearfield	83,203	1,147	73	Attainment
3	PA	Somerset	79,456	1,075	74	Attainment
3	MD	Allegany	74,203	425	175	Attainment
3	PA	Bedford	49,944	1,015	49	Attainment
3	MD	Garrett	29,878	648	46	Attainment

SUMMARY FACTOR 4A: Vehicle Miles Traveled: Sorted Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	PA	Westmoreland	3,217	1	1,223
3	MD	Allegany	1,297	0	17
3	PA	Blair	1,220	2	1,205
3	PA	Cambria	1,176	4	2,649
3	PA	Fayette	1,139	1	431
3	PA	Clearfield	1,056	1	519
3	MD	Garrett	963	2	243
3	PA	Bedford	943	3	563
3	PA	Somerset	932	15	5,174
3	PA	Indiana	727	5	1,804

SUMMARY FACTOR 4B: Percent of Commuters: Sorted Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	PA	Somerset	932	15	5,174
3	PA	Indiana	727	5	1,804
3	PA	Cambria	1,176	4	2,649
3	PA	Bedford	943	3	563
3	PA	Blair	1,220	2	1,205
3	MD	Garrett	963	2	243
3	PA	Westmoreland	3,217	1	1,223
3	PA	Fayette	1,139	1	431
3	PA	Clearfield	1,056	1	519
3	MD	Allegany	1,297	0	17

SUMMARY FACTOR 5 - EXPECTED GROWTH							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	PA	Clearfield	83,203	5,285	7	-180	-17
3	PA	Fayette	146,654	3,293	2	431	38
3	PA	Bedford	49,944	2,065	4	-300	-32
3	PA	Somerset	79,456	1,805	2	8	1
3	MD	Garrett	29,878	1,708	6	-380	-39
3	MD	Allegany	74,203	-16	-0	-370	-29
3	PA	Westmoreland	368,428	-328	-0	762	24
3	PA	Indiana	88,780	-389	-0	306	42
3	PA	Blair	127,840	-1,398	-1	95	8
3	PA	Cambria	150,452	-10,431	-6	513	44

Factor 8: Jurisdictional Boundaries

The Johnstown MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard. Indiana and Clearfield were included in the ozone designation. Clearfield County was included in the ozone nonattainment boundary as it had a violating monitor. Clearfield is estimated to be within the fine particulate standard.

Factor 9: Level of Control

The Shawville Power Plant, located in the northern portion of Clearfield County, has installed a wet limestone scrubber on one of its three units. The plant is located over 100 kilometers to the northeast of the violating monitor in the Johnstown area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA expressed intent to designate a number of counties nonattainment primarily because of high pollutant emissions from power plants. Most of these plants were located in counties outside but near to the metropolitan area. EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas), or where the source is not located close enough to where the partial county boundary could be contiguous to the rest of the nonattainment area. Such free-standing portions of nonattainment areas should only be established based on a pre-existing boundary for a minor civil division such as a township, tax district, or other defined boundary recognized for other governmental use. Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility.

Indiana County; an adjacent county proposed to be added to the Johnstown area has been evaluated with information provided by the Commonwealth of Pennsylvania. The emissions in Indiana County are predominantly from three power plants, Seward, Conemaugh and Homer City. EPA, after consultation with the Commonwealth of Pennsylvania, has defined partial county boundaries which include the power plants and are associated with the Johnstown nonattainment area. In Indiana County, the Townships of Center, East Wheatfield and West Wheatfield are nonattainment and the remainder of Indiana County is attainment/unclassifiable.

EPA is designating Cambria County and part of Indiana County as the Johnstown nonattainment area.

6.3.4.3 Lancaster Area

Discussion

The Lancaster Metropolitan Statistical Area (MSA) is a single county area. Lancaster County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Lancaster MSA is considered a presumptive nonattainment area. Lancaster has monitored 17.0 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Lancaster nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Lancaster County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area. Counties in other MSAs surround Lancaster County. Therefore, additional review of this area is unnecessary.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Lancaster County as the Lancaster nonattainment area.

6.3.4.4 New York Area

Pike County, PA has been included in the New York Metropolitan Area. A review of the area, however, shows that Pike and the next closest county in New Jersey are not contributing to the area. EPA agrees with Pennsylvania's recommendation that this county not be included with the New York nonattainment area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. As Pike County is not a significant contributor to the New York nonattainment area, EPA is designating Pike County as attainment.

6.3.4.5 Philadelphia Area

Discussion

The Philadelphia Metropolitan Statistical Area (MSA) is comprised, in part, of five counties in Pennsylvania. Additional counties in Delaware, Maryland, and New Jersey are included in the MSA. The table below lists the counties in the MSA. Four counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Philadelphia MSA is considered a presumptive nonattainment area. The three Pennsylvania Counties monitoring violations are Philadelphia, Delaware and Chester Counties. In addition, New Castle County, DE monitored a violation. Philadelphia County monitored 16.4 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, five metropolitan counties to be included in the Philadelphia nonattainment area: Philadelphia, Delaware, Montgomery, Chester and Bucks Counties. On June 1, 2004, Pennsylvania indicated a revised recommendation excluding two counties from this area: Bucks and Montgomery.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the original recommendation. EPA intends, based on the information reviewed, to designate five counties as nonattainment in the Philadelphia area: Philadelphia, Delaware, Montgomery, Chester and Bucks Counties.

Summary of Evaluation

EPA has identified Cecil County, MD, part of the presumptive area, as having very low contribution to the area. The county has an attaining monitor (13.0 $\mu\text{g}/\text{m}^3$ compared to the National Standard of 15.0 $\mu\text{g}/\text{m}^3$). A review of the remaining factors provides sufficient evidence to modify the nonattainment boundary to exclude Cecil County, MD. The New Jersey counties have been evaluated and are discussed in a separate document prepared by EPA Region

2. New Castle County, DE and Chester and Montgomery Counties in Pennsylvania have moderate to high emissions contribution to the area, based on the weighted emissions factor. EPA has reviewed these counties based the nine factors to determine the appropriate designation. The population density, growth and commuting patterns when compared to the core MSA counties in this area support including these counties in the nonattainment area. The tables below summarize the data used support the modification of Pennsylvania's recommendation to include Bucks and Montgomery Counties with the three Pennsylvania violating counties in the MSA.

PHILADELPHIA, PA MSA Status of Counties: Alphabetical by State					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	DE	New Castle	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	MD	Cecil	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Atlantic	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Burlington	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Camden	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cape May	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cumberland	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Gloucester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Salem	Attainment	Attainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Bucks	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Chester	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Delaware	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Montgomery	Attainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Philadelphia	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD

SUMMARY OF FACTOR 1: EMISSIONS PHILADELPHIA, PA MSA											
** Counties Listed by Percent Contribution to area**											
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor	PM_{2.5} Designation
			PM	SO₂	NOX	VOC	Amm	Carbon	Crustal		
3	DE	New Castle	4,558	61,499	34,640	24,088	2,605	2,276	1,645	18.6	Nonattainment
3	PA	Philadelphia	3,944	16,861	55,011	50,439	3,506	2,116	1,200	14.0	Nonattainment
3	PA	Delaware	3,173	24,882	33,259	19,071	903	1,458	1,225	11.1	Nonattainment
3	PA	Montgomery	3,910	8,721	21,191	32,545	1,293	1,905	1,700	8.7	Nonattainment
3	PA	Chester	3,716	11,391	16,909	17,697	2,267	1,228	2,226	6.9	Nonattainment
3	PA	Bucks	3,100	6,870	16,852	23,024	1,124	1,443	1,444	6.8	Nonattainment
2	NJ	Gloucester	1,909	9,154	21,849	15,087	741	1,035	697	6.5	Nonattainment
2	NJ	Camden	2,151	4,120	17,025	20,904	887	1,286	727	5.9	Nonattainment
2	NJ	Burlington	2,298	2,330	15,113	18,139	913	1,326	836	5.6	Nonattainment
2	NJ	Cape May	2,157	14,578	7,894	11,886	206	938	1,044	5.5	Attainment
2	NJ	Atlantic	1,404	1,905	8,676	11,906	437	773	563	3.3	Attainment
2	NJ	Cumberland	1,374	1,941	7,054	9,279	423	638	669	2.8	Attainment
2	NJ	Salem	1,243	4,485	5,457	8,229	534	487	653	2.6	Attainment
3	MD	Cecil	950	948	5,502	4,441	505	401	518	1.8	Attainment

**SUMMARY OF FACTOR 2: AIR QUALITY
PHILADELPHIA MSA**

**** Counties Listed by Highest DV ****

EPA Reg	ST	COUNTY	Design Values							PM2.5 Designation
			'01-'03		'00-'02		'99-'01			
3	PA	Philadelphia	16.4	NA	16.8	NA	16.6	NA	Nonattainment	
3	DE	New Castle	16.2	NA	16.5	NA	16.6	NA	Nonattainment	
3	PA	Delaware	15.6	NA	15.7	NA	15.0	a	Nonattainment	
3	PA	Chester	15.1	na	14.6	a			Nonattainment	
2	NJ	Camden	14.6	a	14.8	a	14.6	a	Nonattainment	
3	PA	Bucks	14.6	A	14.3	a	13.4	a	Nonattainment	
3	PA	Montgomery	14.3	A	14.2	A	13.8	a	Nonattainment	
2	NJ	Gloucester	13.8	a	14.2	A	14.3	a	Nonattainment	
3	MD	Cecil	13.0	a	13.4	A	12.5	a	Attainment	
2	NJ	Atlantic	11.6	a	11.4	a	11.2	a	Attainment	
2	NJ	Burlington	No Monitor							Nonattainment
2	NJ	Cape May	No Monitor							Attainment
2	NJ	Cumberland	No Monitor							Attainment
2	NJ	Salem	No Monitor							Attainment

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION
PHILADELPHIA, PA MSA**

Counties Listed Highest to Lowest Population

EPA Reg	ST	COUNTY	Population & Area			PM2.5 Designation
			2002	Area (sq miles)	Density '02	
3	PA	Philadelphia	1,492,231	135	11,054	Nonattainment
3	PA	Montgomery	766,517	483	1,587	Nonattainment
3	PA	Bucks	610,440	608	1,004	Nonattainment
3	PA	Delaware	553,435	184	3,008	Nonattainment
3	DE	New Castle	512,370	426	1,203	Nonattainment
2	NJ	Camden	511,957	222	2,306	Nonattainment
3	PA	Chester	450,160	756	595	Nonattainment
2	NJ	Burlington	437,871	805	544	Nonattainment
2	NJ	Gloucester	262,049	325	806	Nonattainment
2	NJ	Atlantic	259,423	561	462	Attainment
2	NJ	Cumberland	147,768	489	302	Attainment
2	NJ	Cape May	102,013	255	400	Attainment
3	MD	Cecil	90,335	348	260	Attainment
2	NJ	Salem	64,438	338	191	Attainment

SUMMARY FACTOR 4: COMMUTING PATTERNS: PHILADELPHIA, PA MSA

Counties Listed Highest to Lowest Number of Commuters

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		PM2.5 Designation
			2002	Percent	Number	
3	PA	Philadelphia	10,213	23	129,902	Nonattainment
3	PA	Montgomery	4,677	32	120,472	Nonattainment
3	PA	Delaware	3,513	44	111,594	Nonattainment
2	NJ	Camden	4,332	43	98,432	Nonattainment
3	PA	Bucks	3,830	31	93,563	Nonattainment
3	PA	Chester	3,128	32	70,486	Nonattainment
2	NJ	Gloucester	2,312	51	62,141	Nonattainment
2	NJ	Burlington	3,748	29	60,278	Nonattainment
3	DE	New Castle	4,957	11	27,598	Nonattainment
3	MD	Cecil	1,340	39	16,195	Nonattainment
2	NJ	Atlantic	2,236	13	14,237	Attainment
2	NJ	Salem	734	48	13,922	Attainment
2	NJ	Cumberland	1,166	22	12,911	Attainment
2	NJ	Cape May	749	26	11,360	Attainment

SUMMARY FACTOR 5: EXPECTED GROWTH: PHILADELPHIA, PA MSA**Counties Listed Highest to Lowest Growth Rate**

EPA Reg	ST	COUNTY	Population			VMT		PM2.5 Designation
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10	
3	MD	Cecil	90,335	14,604	20	60	4	Nonattainment
3	PA	Chester	450,160	57,105	15	785	25	Nonattainment
3	DE	New Castle	512,370	58,319	13	1,273	26	Nonattainment
2	NJ	Atlantic	259,423	28,225	13	805	36	Nonattainment
2	NJ	Gloucester	262,049	24,591	11	262	11	Nonattainment
3	PA	Montgomery	766,517	71,986	11	1,344	29	Nonattainment
3	PA	Bucks	610,440	56,461	10	957	25	Nonattainment
2	NJ	Cape May	102,013	7,237	8	179	24	Nonattainment
2	NJ	Burlington	437,871	28,328	7	388	10	Nonattainment
2	NJ	Cumberland	147,768	8,385	6	227	19	Attainment
2	NJ	Camden	511,957	6,108	1	782	18	Attainment
3	PA	Delaware	553,435	3,213	1	1,022	29	Attainment
2	NJ	Salem	64,438	-1,009	-2	139	19	Attainment
3	PA	Philadelphia	1,492,231	-68,027	-4	2,763	27	Nonattainment

Factor 8: Jurisdictional Boundaries

The Philadelphia MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard.

Factor 9: Level of Control of emission sources

There are many sources in the metropolitan area; the level of control of sources was not a significant issue.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Pennsylvania has refuted the nonattainment designation of Bucks and Chester counties. EPA disagrees. Bucks and Montgomery counties are part of the core metropolitan area. Both counties are among the highest population and commuting in the Philadelphia area. Bucks County has experienced a 10 percent growth rate. EPA is designating Philadelphia, Bucks, Montgomery, Delaware and Chester as the Pennsylvania portion of the Philadelphia area.

6.3.4.6 Pittsburgh Area

Discussion

The Pittsburgh Metropolitan Statistical Area (MSA) is comprised of six counties. The MSA was adjusted in 2003 to add Armstrong County to the metropolitan area. Also in 2003, the Pittsburgh-New Castle, PA Combined Statistical Area was formed with the addition of Lawrence County. Four counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Pittsburgh MSA is considered a presumptive nonattainment area. The four counties monitoring violations are Allegheny, Beaver, Westmoreland and Washington. Allegheny County monitored 21.2 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, the four violating metropolitan counties to be included in the Pittsburgh nonattainment area.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the recommendation of the four MSA counties. EPA also agrees with the recommendation that Fayette County, although part of the presumptive nonattainment area be excluded from the nonattainment boundary. EPA intends, based on the information reviewed, to designate an additional MSA county, Butler, with Allegheny, Beaver, Westmoreland and Washington as nonattainment in the Pittsburgh area. In addition, EPA intends to add three adjacent counties, Armstrong, Greene and Lawrence to the nonattainment area.

Summary of Evaluation

EPA has identified Fayette County part of the presumptive area as having very low contribution to the area. A review of the factors provides sufficient evidence to modify the nonattainment boundary to exclude these counties.

The adjacent counties of Armstrong and Greene showed high emissions contribution to the area, based on the weighted emissions factor. EPA has reviewed these counties based on all the factors to determine the appropriate designation. The population density, growth and commuting patterns when compared to the core MSA counties in this area support including these counties in the nonattainment area. In addition, a review of the data suggests contribution to the area from Lawrence County as well. The tables below summarize the data used support the modification of Pennsylvania's June 1 revision to the recommendations to include Armstrong, Butler, Greene and Lawrence as nonattainment with the four violating counties in the MSA.

SUMMARY OF PITTSBURGH, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 DESIGNATION	Area - '99 C/MSA
3	PA	Allegheny **	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Beaver	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Westmoreland	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Washington	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Butler	Attainment	Nonattainment	Pittsburgh, PA
3	PA	Fayette	Attainment	Attainment	Pittsburgh, PA
3	PA	Armstrong	Attainment	Nonattainment	
3	PA	Greene	Attainment	Nonattainment	
3	PA	Indiana	Attainment	Nonattainment	
3	WV	Marshall	Nonattainment	Nonattainment	Wheeling, WV-OH
3	WV	Monongalia	Nonattainment	Nonattainment	
3	PA	Lawrence	Attainment	Nonattainment	
3	WV	Preston	Attainment	Attainment	
3	WV	Hancock	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV
5	OH	Mahoning	Nonattainment	Nonattainment	Youngstown-Warren, OH
3	PA	Cambria	Nonattainment	Nonattainment	Johnstown, PA
5	OH	Columbiana	Attainment	Attainment	Youngstown-Warren, OH
3	PA	Mercer	Attainment	Nonattainment	Sharon, PA
3	PA	Somerset	Attainment	Attainment	Johnstown, PA
3	PA	Venango	Attainment	Attainment	
3	PA	Clarion	Attainment	Attainment	
3	MD	Garrett	Attainment	Attainment	
3	PA	Jefferson	Attainment	Attainment	
3	WV	Brooke	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV
3	WV	Ohio	Nonattainment	Nonattainment	Wheeling, WV-OH

** Note: In the final designations, EPA is designating 4Glassport, Liberty, Lincoln, and Portvue Boroughs and the City of Clairton in Allegheny County as a separate Liberty-Clairton Nonattainment area. The remaining portions of the county will be included with the Pittsburgh nonattainment area.

SUMMARY OF FACTOR 1: EMISSIONS											
PITTSBURGH, PA MSA											
Counties sorted by Largest Weighted Emissions Contribution											
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor	PM2.5 DESIGNATION
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal		
3	PA	Armstrong	12,338	191,070	26,670	3,531	555	2,701	7,726	60.3	Nonattainment
3	PA	Greene	11,626	186,481	31,832	2,756	256	2,548	7,223	59.2	Nonattainment
3	PA	Indiana	10,981	158,311	52,550	4,683	692	2,428	6,868	55.1	Nonattainment
3	PA	Allegheny	10,837	61,168	81,166	54,821	2,655	4,570	4,576	46.6	Nonattainment
3	WV	Marshall	5,596	113,921	44,521	4,125	122	1,319	3,417	38.2	Nonattainment
3	WV	Monongalia	5,459	81,413	17,545	5,606	185	1,320	3,331	27.3	Nonattainment
3	PA	Beaver	4,948	40,380	39,564	8,738	543	1,368	2,900	21.3	Nonattainment
3	PA	Lawrence	3,173	35,620	13,065	4,890	647	681	1,833	13.2	Nonattainment
3	PA	Westmoreland	3,320	3,593	18,461	17,371	1,119	1,533	1,564	10.7	Nonattainment
3	PA	Washington	3,011	8,221	22,097	9,392	813	1,190	1,505	10.6	Nonattainment
3	WV	Preston	1,715	21,864	6,528	1,874	271	465	1,021	8.1	Attainment
3	WV	Hancock	4,335	1,982	4,961	3,585	571	1,243	1,747	7.2	Nonattainment
5	OH	Mahoning	1,849	3,511	12,210	15,043	845	920	804	6.8	Nonattainment
3	PA	Butler	2,166	4,798	9,706	8,697	751	806	1,224	6.4	Nonattainment
3	PA	Cambria	1,594	8,716	8,287	7,229	490	679	804	6.4	Nonattainment
3	PA	Fayette	1,600	2,053	6,788	6,625	458	641	856	4.5	Attainment
5	OH	Columbiana	1,187	1,291	5,825	5,881	1,250	442	696	3.3	Attainment
3	PA	Mercer	1,271	874	7,459	8,110	1,095	412	760	3.3	Nonattainment
3	PA	Somerset	1,139	1,548	4,706	4,769	1,494	415	659	3.0	Attainment
3	PA	Venango	661	3,261	3,896	3,945	232	284	332	2.6	Attainment
3	PA	Clarion	790	1,629	4,031	3,030	435	291	396	2.3	Attainment
3	MD	Garrett	571	709	4,445	2,424	719	275	268	2.1	Attainment
3	PA	Jefferson	691	936	4,044	2,906	425	253	341	2.0	Attainment
3	WV	Brooke	527	1,663	2,500	4,358	439	191	277	1.6	Nonattainment
3	WV	Ohio	351	514	3,609	2,779	123	192	135	1.5	Nonattainment

SUMMARY OF FACTOR 2: AIR QUALITY PITTSBURGH, PA MSA								
Counties Sorted by Highest Monitored and Estimated Air Quality								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	PA	Allegheny	21.2	NA	21.4	NA	21.0	NA
3	WV	Hancock	17.4	NA	17.5	NA	17.4	NA
3	PA	Beaver	16.0	NA	16.0	NA	16.4	na
3	PA	Cambria	15.8	NA	15.8	NA	15.3	NA
3	WV	Marshall	15.7	NA	16.0	NA	16.5	NA
3	PA	Westmoreland	15.5	NA	15.6	NA	15.6	NA
3	PA	Washington	15.5	NA	15.7	NA	15.5	NA
5	OH	Mahoning	15.2	NA	15.7	NA	16.4	NA
3	WV	Monongalia	14.9	A	15.0	A	15.0	A
3	PA	Mercer	14.3	A	14.6	a	14.9	a
5	OH	Columbiana	No Monitor					
3	PA	Fayette	No Monitor					
3	PA	Armstrong	No Monitor					
3	PA	Greene	No Monitor					
3	PA	Indiana	No Monitor					
3	PA	Lawrence	No Monitor					
3	PA	Butler	No Monitor					
3	WV	Preston	No Monitor					

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	PA	Allegheny	1,269,904	730	1,740
3	PA	Westmoreland	368,428	1,023	360
5	OH	Mahoning	253,308	415	610
3	PA	Washington	204,110	857	238
3	PA	Beaver	179,351	435	412
3	PA	Butler	178,078	789	226
3	PA	Cambria	150,452	688	219
3	PA	Fayette	146,654	790	186
3	PA	Mercer	119,514	672	178
5	OH	Columbiana	111,806	533	210
3	PA	Lawrence	94,104	361	261
3	PA	Indiana	88,780	830	107
3	WV	Monongalia	82,895	361	230
3	PA	Armstrong	71,673	654	110
3	PA	Greene	40,520	576	70
3	WV	Marshall	34,898	307	114
3	WV	Hancock	32,082	83	387
3	WV	Preston	29,460	648	45

SUMMARY FACTOR 4: COMMUTING PATTERNS						
PITTSBURGH, PA MSA						
Counties sorted by VMT - Highest to Lowest						
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties		DESIGNATION
			2002	Percent	Number	
3	PA	Allegheny	10,522	6	35,095	Nonattainment
3	PA	Westmoreland	3,217	31	51,192	Nonattainment
5	OH	Mahoning	2,576	1	842	Nonattainment
3	PA	Washington	2,057	36	32,606	Nonattainment
3	PA	Butler	1,634	29	23,908	Nonattainment
3	PA	Beaver	1,582	36	29,617	Nonattainment
3	PA	Mercer	1,410	4	2,100	Nonattainment
3	PA	Cambria	1,176	2	990	Nonattainment
3	PA	Fayette	1,139	30	17,491	Attainment
5	OH	Columbiana	928	5	2,676	Nonattainment
3	PA	Lawrence	822	18	7,307	Nonattainment
3	WV	Monongalia	810	2	601	Nonattainment
3	PA	Indiana	727	11	4,008	Nonattainment
3	PA	Armstrong	624	34	10,096	Nonattainment
3	PA	Greene	560	24	3,605	Nonattainment
3	WV	Preston	294	1	177	Attainment
3	WV	Marshall	233	4	495	Nonattainment
3	WV	Hancock	212	16	2,281	Nonattainment

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	PA	Westmoreland	3,217	31	51,192
3	PA	Allegheny	10,522	6	35,095
3	PA	Washington	2,057	36	32,606
3	PA	Beaver	1,582	36	29,617
3	PA	Butler	1,634	29	23,908
3	PA	Fayette	1,139	30	17,491
3	PA	Armstrong	624	34	10,096
3	PA	Lawrence	822	18	7,307
3	PA	Indiana	727	11	4,008
3	PA	Greene	560	24	3,605
5	OH	Columbiana	928	5	2,676
3	WV	Hancock	212	16	2,281
3	PA	Mercer	1,410	4	2,100
3	PA	Cambria	1,176	2	990
5	OH	Mahoning	2,576	1	842
3	WV	Monongalia	810	2	601
3	WV	Marshall	233	4	495
3	WV	Preston	294	1	177

SUMMARY FACTOR 5: EXPECTED GROWTH								
PITTSBURGH, PA MSA								
Counties sorted by Growth Rate - Highest to Lowest								
EPA Reg	ST	COUNTY	Population			VMT		EPA INTENDED PM2.5 DESIGNATION
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10	
3	PA	Allegheny	1,269,904	-54,783	-4	3,233	31	Nonattainment
3	PA	Beaver	179,351	-4,681	-3	420	27	Nonattainment
3	PA	Westmoreland	368,428	-328	-0	762	24	Nonattainment
3	PA	Washington	204,110	-1,687	-1	264	13	Nonattainment
3	PA	Butler	178,078	22,070	15	-156	-10	Nonattainment
3	PA	Fayette	146,654	3,293	2	431	38	Attainment
3	PA	Armstrong	71,673	-1,086	-1	280	45	Nonattainment
3	PA	Greene	40,520	1,122	3	-52	-9	Nonattainment
3	PA	Indiana	88,780	-389	-0	306	42	Nonattainment
3	WV	Marshall	34,898	-1,837	-5	241	103	Nonattainment
3	WV	Monongalia	82,895	6,357	8	-180	-22	Nonattainment
3	PA	Lawrence	94,104	-1,603	-2	59	7	Nonattainment
3	WV	Preston	29,460	297	1	71	24	Attainment
3	WV	Hancock	32,082	-2,566	-7	192	91	Nonattainment
5	OH	Mahoning	253,308	-7,251	-3	242	9	Nonattainment
3	PA	Cambria	150,452	-10,431	-6	513	44	Nonattainment
5	OH	Columbiana	111,806	3,799	4	215	23	Nonattainment
3	PA	Mercer	119,514	-710	-1	-182	-13	Nonattainment

Factor 8: Jurisdictional Boundaries

The Pittsburgh MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard. Butler and Mercer County were included in the ozone nonattainment area. Lawrence County was designated attainment.

Factor 9: Level of Control of emission sources

There are a number of significant emission sources in the Pittsburgh metropolitan area. Many do not have state of the art controls.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA expressed intent to designate a number of counties nonattainment primarily because of high pollutant emissions from power plants. Most of these plants were located in counties outside but near to the metropolitan area. EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas), or where the source is not located close enough to where the partial county boundary could be contiguous to the rest of the nonattainment area. Such free-standing portions of nonattainment areas should only be established based on a pre-existing boundary for a minor civil division such as a township, tax district, or other defined boundary recognized for other governmental use. Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility.

All of the adjacent counties in the proposed nonattainment area are predominantly rural in nature. The primary reason for including the adjacent counties of Armstrong, Greene and Lawrence is the contribution of emissions from power plants. The Commonwealth of Pennsylvania has submitted, as requested, an identification of partial counties to include the Armstrong, Keystone, Hatfields Ferry and New Castle power plants. In Armstrong County the Townships of Plumcreek and Washington are nonattainment. The remainder of Armstrong County is attainment/unclassifiable. In Greene County the Township of Monongahela is nonattainment. The remainder of Greene County is attainment/unclassifiable. In Lawrence County the Township of Taylor is nonattainment. The remainder of Lawrence County is attainment/unclassifiable.

Justifications for Separate Nonattainment Area (Liberty-Clairton)

The Commonwealth of Pennsylvania provided extensive documentation to support a recommendation that a separate, distinctively local-source impacted, nonattainment area be designated within the Pittsburgh nonattainment area. The recommended Liberty Borough area is specified as the five municipalities which comprise the area in the vicinity of the Clairton Coke Works which were previously designated nonattainment for PM-10.

The complexity of the largest metallurgical coke plant in the United States contributes a combination of particulates, sulfur dioxide, ammonia, and hundreds of volatile organic chemicals, in an atmosphere actually created by the large plant — high humidity, gases and materials discharged at temperatures well above 1000 degrees. Although the coke plant is well-controlled, the combination of low-level emissions in a narrow river valley creates a local air quality problem which is uniquely different from the remainder of the area.

The analysis of speciation data, initiated in October 2003, demonstrates that the sulfate and

nitrate components are consistent with the larger area but the elemental and organic carbon fractions are consistently much greater than the regional data. The excess of carbon is, on average, approximately equal to the difference between the Liberty Borough design concentration and the average PM_{2.5} concentration for the remainder of Allegheny County.

The Commonwealth of Pennsylvania conducted an analysis of the meteorology of the more than 200 days during a three-year period when the concentration at the Liberty Borough monitor was at least one standard deviation greater than the regional average. On more than 80% of the days the wind flows from the southwest which would cause the coke plant to impact the Liberty Borough monitor.

EPA agrees with the Commonwealth's recommendation is designating Glassport, Liberty, Lincoln and Port Vue Boroughs and the City of Clairton as the separate Liberty/Clairton nonattainment area. The remainder of Allegheny County is in the Pittsburgh nonattainment area.

6.3.4.7 Reading Area

Discussion

The Reading Metropolitan Statistical Area (MSA) is a single county area. Berks County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Reading MSA is considered a presumptive nonattainment area. Berks has monitored 16.4 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Reading nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Berks County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area.

EPA reviewed the surrounding counties of Lehigh and Northampton. The other surrounding counties were reviewed as part of other potential nonattainment areas. Based on the review of the factors, EPA intends to designate Lehigh and Northampton counties as attainment.

The tables below substantiate Pennsylvania's recommendation for the Reading area.

SUMMARY OF Reading, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	PM _{2.5} Designation	Area - '99 C/MSA
C/MSA Total (excluding surrounding) = 1 county					
3	PA	Berks	Nonattainment	Nonattainment	Reading, PA
3	PA	Chester	Attainment	Nonattainment	Philadelphia, PA-NJ
3	PA	Lancaster	Nonattainment	Nonattainment	Lancaster, PA
3	PA	Lebanon	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lehigh	Attainment	Attainment	Allentown-Bethlehem-Easton, PA
3	PA	Montgomery	Attainment	Nonattainment	Philadelphia, PA-NJ
3	PA	Northampton	Attainment	Attainment	Allentown-Bethlehem-Easton, PA
3	PA	Schuylkill	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS READING, PA MSA										
** Counties Listed by Percent Contribution to Area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO ₂	NOx	VOC	Amm	Carbon	Crustal	
3	PA	Berks	4,806	17,143	21,834	21,506	4,133	1,520	2,821	100
3	PA	Chester	3,716	11,391	16,909	17,697	2,267	1,228	2,226	77.5
3	PA	Lancaster	5,673	10,786	20,901	27,383	17,154	1,746	3,569	99.5
3	PA	Lebanon	1,451	2,758	6,284	6,931	4,593	468	903	28.2
3	PA	Lehigh	1,844	6,027	12,154	14,418	792	624	1,018	47.7
3	PA	Montgomery	3,910	8,721	21,191	32,545	1,293	1,905	1,700	102.8
3	PA	Northampton	5,646	55,105	24,051	10,401	805	1,212	3,374	
3	PA	Schuylkill	1,441	8,390	7,857	7,212	1,311	483	833	35.8
SUMMARY OF FACTOR 2: AIR QUALITY READING MSA										
EPA Reg	ST	COUNTY	Design Values							
			'01-'03		'00-'02		'99-'01			
3	PA	Berks	16.4	NA	16.7	NA	15.6	NA		
3	PA	Chester	15.1	na	14.6	a				
3	PA	Lancaster	17.0	NA	17.1	NA	16.9	NA		
3	PA	Lebanon								
3	PA	Lehigh	14.6	a	14.3	A	13.8	a		
3	PA	Montgomery	14.3	A	14.2	A	13.8	a		
3	PA	Northampton	14.8	A	14.6	a	14.0	a		
3	PA	Schuylkill								

SUMMARY OF FACTOR 3A: POPULATION					
Sorted Highest to Lowest					
			2002	Area (sq miles)	Density '02
3	PA	Montgomery	766,517	483	1,587
3	PA	Lancaster	478,561	949	504
3	PA	Chester	450,160	756	595
3	PA	Berks	382,108	859	445
3	PA	Lehigh	317,533	347	915
3	PA	Northampton	273,324	374	731
3	PA	Schuylkill	148,505	779	191
3	PA	Lebanon	121,199	362	335

SUMMARY OF FACTOR 3B: POPULATION DENSITY				
Sorted Highest to Lowest				
EPA Reg	ST	2002	Area (sq miles)	Density '02
3	Montgomery	766,517	483	1,587
3	Lehigh	317,533	347	915
3	Northampton	273,324	374	731
3	Chester	450,160	756	595
3	Lancaster	478,561	949	504
3	Berks	382,108	859	445
3	Lebanon	121,199	362	335
3	Schuylkill	148,505	779	191

Factor 4: Commuting Patterns: Sorted by VMT Highest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Counties	
			2002	Percent	Number
3	PA	Montgomery	4,677	1	4,231
3	PA	Lancaster	4,004	2	4,074
3	PA	Berks	3,952		
3	PA	Chester	3,128	1	1,916
3	PA	Lehigh	2,738	2	3,266
3	PA	Northampton	2,132	3	3,766
3	PA	Schuylkill	1,463	9	5,790
3	PA	Lebanon	1,136	5	2,799

Factor 4B: Commuting Patterns:					
Sorted by Number of Commuters Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Counties	
			2002	Percent	Number
3	PA	Berks	3,952		
3	PA	Schuylkill	1,463	9	5,790
3	PA	Montgomery	4,677	1	4,231
3	PA	Lancaster	4,004	2	4,074
3	PA	Northampton	2,132	3	3,766
3	PA	Lehigh	2,738	2	3,266
3	PA	Lebanon	1,136	5	2,799
3	PA	Chester	3,128	1	1,916

Summary Factor 5: Expected Growth:								
Sorted by '90-'00 Growth Highest to Lowest								
EPA Reg	ST	COUNTY	Population			VMT		
			2,002	Growth '90-'00	Pct chng '90-'00	2002	Projected Growth '02-'10	Pct chng '02-'10
3	PA	Montgomery	766,517	71,986	11	4,677	1,344	29
3	PA	Chester	450,160	57,105	15	3,128	785	25
3	PA	Lancaster	478,561	47,836	11	4,004	850	21
3	PA	Berks	382,108	37,115	11	3,952	-230	-6
3	PA	Lehigh	317,533	20,960	7	2,738	517	19
3	PA	Northampton	273,324	19,961	8	2,132	631	30
3	PA	Lebanon	121,199	6,583	6	1,136	46	4
3	PA	Schuylkill	148,505	-2,249	-1	1,463	-139	-10

Factor 8: Jurisdictional Boundaries

The Reading MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard.

Factor 9: Level of Control of emission sources

The Martins Creek Power Plant has a state order to shut down coal units by the year 2007. This conversion will greatly reduce the emissions from Northampton County.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Berks County as the Reading nonattainment area.

6.3.4.8 York Area

The York metropolitan Statistical Area (MSA) is a single county area. York County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on monitored violations, the York MSA is considered a presumptive nonattainment area. York has monitored 17.3 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the York nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, York County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating York County as the York nonattainment area.

6.3.4.9 Youngstown Area

Discussion

The Youngstown, OH Metropolitan Statistical Area (MSA) was adjusted by OMB in 2003 to include, in part, one county in Pennsylvania. The core metropolitan counties, Trumbull, Mahoning and Columbiana counties in Ohio, have been reviewed by EPA Region 5 and are discussed in a separate document. Two Ohio counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Youngstown MSA is considered a presumptive nonattainment area.

Review of the factors for Mercer County have identified that although emissions contribution is comparatively low, there is moderate population and commuting. The inclusion of this county in the 2003 urban area adds additional evidence to the conclusion that Mercer is part of the metropolitan area. The factors suggest inclusion of Mercer County with the Youngstown area.

SUMMARY OF Youngstown, OH MSA					
EPA Reg	ST	COUNTY	State Recommend PM_{2.5} Designation	Region 3 INTENDED PM_{2.5} DESIGNATION	Area - '99 C/MSA
5	OH	Trumbull	Nonattainment	Nonattainment	Youngstown-Warren, OH
5	OH	Mahoning	Nonattainment	Nonattainment	Youngstown-Warren, OH
5	OH	Columbiana	Attainment	Nonattainment	Youngstown-Warren, OH
3	PA	Mercer	Attainment	Nonattainment	Sharon, PA
3	PA	Lawrence	Attainment	Nonattainment	
3	PA	Crawford	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS										
Youngstown, OH MSA										
Counties sorted by Largest Weighted Emissions Contribution										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO₂	NOx	VOC	Amm	Carbon	Crustal	
5	OH	Trumbull	2,882	30,327	19,010	17,417	808	1,217	1,365	52.9
3	PA	Lawrence	3,173	35,620	13,065	4,890	647	681	1,833	41.2
5	OH	Mahoning	1,849	3,511	12,210	15,043	845	920	804	31.2
3	PA	Crawford	1,367	1,231	8,034	5,665	1,370	413	772	17.3
3	PA	Mercer	1,271	874	7,459	8,110	1,095	412	760	16.7
5	OH	Columbiana	1,187	1,291	5,825	5,881	1,250	442	696	15.9

SUMMARY OF FACTOR 2: AIR QUALITY								
Counties Sorted by Highest Monitored and Estimated Air Quality								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
5	OH	Jefferson	17.8	NA	18.2	NA	18.9	
5	OH	Stark	17.3	NA	17.9	NA	18.3	NA
3	PA	Beaver	16.0	NA	16.0	NA	16.4	na
5	OH	Mahoning	15.2	NA	15.7	NA	16.4	NA
5	OH	Trumbull	15.0	A	15.6	NA	16.2	NA
3	PA	Mercer	14.3	A	14.6	a	14.9	a
5	OH	Portage	14.2	A	15.1	NA	15.3	NA
3	PA	Lawrence	No monitor					
3	PA	Crawford	No monitor					
5	OH	Columbiana	No monitor					

SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF URBANIZATION					
PITTSBURGH, PA MSA					
Counties Sorted by Population - Highest to Lowest					
EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
5	OH	Jefferson	72,402	410	177
3	PA	Beaver	179,351	435	412
5	OH	Trumbull	223,518	616	363
3	PA	Lawrence	94,104	361	261
5	OH	Mahoning	253,308	415	610
3	PA	Crawford	89,856	1,013	89
3	PA	Mercer	119,514	672	178
5	OH	Columbiana	111,806	533	210

**SUMMARY FACTOR 4A: COMMUTING PATTERNS
YOUNGSTOWN, PA MSA**

Counties sorted by VMT - Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
5	OH	Stark	3,135	1	1,970
5	OH	Mahoning	2,576	21	22,894
5	OH	Trumbull	2,108	13	12,347
5	OH	Portage	1,796	3	2,234
3	PA	Butler	1,634	0	249
3	PA	Beaver	1,582	1	689
3	PA	Mercer	1,410	8	3,949
5	OH	Ashtabula	1,107	1	636
3	PA	Crawford	981	0	168
5	OH	Columbiana	928	18	9,090

**SUMMARY FACTOR 4B: COMMUTING PATTERNS
YOUNGSTOWN, PA MSA**

Counties sorted by Number of Commuters: Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
5	OH	Mahoning	2,576	21	22,894
5	OH	Trumbull	2,108	13	12,347
5	OH	Columbiana	928	18	9,090
3	PA	Mercer	1,410	8	3,949
5	OH	Jefferson	741	3	726
3	PA	Beaver	1,582	1	689
3	PA	Crawford	981	0	168

**SUMMARY FACTOR 5: EXPECTED GROWTH
YOUNGSTOWN MSA**

Counties sorted by Growth Rate - Highest to Lowest

EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	PA	Butler	178,078	22,070	15	-156	-10
3	PA	Crawford	89,856	4,197	5	-29	-3
5	OH	Columbiana	111,806	3,799	4	215	23
5	OH	Trumbull	223,518	-2,697	-1	428	20
3	PA	Mercer	119,514	-710	-1	-182	-13
3	PA	Lawrence	94,104	-1,603	-2	59	7
3	PA	Beaver	179,351	-4,681	-3	420	27
5	OH	Mahoning	253,308	-7,251	-3	242	9

6.3.5 EPA 9-Factor Analyses for Virginia for the Designation of Nonattainment Areas for PM2.5

The fourth column of the following table identifies the counties and cities in Virginia that EPA intends to designate as nonattainment.

Area	Virginia Counties and Cities in 1999 Metropolitan Statistical Area	State of Virginia Recommendation	EPA Recommendation of Virginia Counties and Cities
Washington, DC MSA (Part of the Washington-Baltimore CMSA)	Alexandria (City) Arlington Clarke Culpeper Fairfax Fairfax (City) Falls Church (City) Fauquier Fredericksburg King George Loudoun Manassas (City) Manassas Park (City) Prince William Spotsylvania Stafford Warren	None Recommended	Arlington Alexandria (City) Fairfax Fairfax (City) Falls Church (City) Loudoun Manassas (City) Manassas Park (City) Prince William
Total number of areas	17	0	9

State Summary

6.3.5.1 Washington DC Area

The Commonwealth of Virginia's recommendation was submitted on February 13, 2003, in a letter from Robert B. Burnley.

Based on the air quality data for the years 2001-2003, the Washington DC fine particulate (PM2.5) nonattainment area consists, in part, of the 17 northern counties/cities in Virginia. Virginia has recommended that all areas in the State be designated as attaining the PM2.5 standard. While EPA agrees with the State's recommendations in part, we intend to modify the recommendations for the Virginia portion of the Washington DC MSA. EPA has identified five counties and four cities in Virginia that we recommend as nonattainment. The following discussion provides EPA's rationale for considering the modification to Virginia's recommendation.

Discussion

The Washington DC Metropolitan Statistical Area (MSA) is part of the Washington DC Consolidated Metropolitan Statistical Area (CMSA). Because of the large size of the CMSA, it

has been split into three smaller areas to be more consistent with the ozone designations and to facilitate planning in the areas.

The Washington DC MSA is comprised of 23 areas: 5 in Maryland, 17 in Virginia, and the District of Columbia. Washington DC and Prince Georges County in Maryland have monitored violations of the fine particulate (PM_{2.5}) standard of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Washington DC MSA is considered a presumptive nonattainment area. The Washington DC monitor is intended to be used as the Design Value monitor for this MSA.

Summary of Evaluation

EPA reviewed the 9 factors for the counties within the Metropolitan area as well as counties adjacent to the Metropolitan area in order to determine the appropriate nonattainment area. EPA agrees with Virginia's recommendation of attainment for the following counties in the Washington DC MSA: Clarke, Culpeper, Fauquier, Fredericksburg, King George, Spotsylvania, Stafford, and Warren. Based on weighted emissions screening, EPA considers these counties to have low contribution to the nonattainment area. The combined factor analysis supports exclusion of these counties from the presumptive boundaries of the nonattainment area.

The 9-factor analysis for Arlington, Alexandria, Fairfax, Fairfax (City), Falls Church, Loudoun, Manassas, Manassas Park, and Prince William support a designation of nonattainment, thus EPA intends to designate these counties as nonattainment.

Arlington and Alexandria have significant populations and commuting into the nonattainment area (despite monitored attainment in Arlington), Fairfax has the highest population and commuting levels in the MSA and has moderate levels of emissions. Prince William has a high level of emissions, high population and population growth. Fairfax (City), Falls Church, Manassas, and Manassas Park are small areas (10 square miles or less) with high density populations that are entirely within the nonattainment area. The combined factor analysis for these areas indicate potential contribution to the violations in the nonattainment area, therefore EPA intends to designate them as nonattainment.

Loudoun County has low emissions and has monitored attainment for 2001-2003 (13.6 $\mu\text{g}/\text{m}^3$). However, Loudoun County has experienced high growth, having had the highest population growth percentage in the MSA. The amount of population growth ranks third in the MSA from 1990-2000, and there is high population density in the eastern portion of the county. VMT growth is moderate, and a large percentage of the commuters are entering the other areas of the MSA. The combined factor analysis for Loudoun indicates potential contribution to the violations in the nonattainment area, therefore EPA intends to designate Loudoun County as nonattainment.

SUMMARY OF WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 Designation	Area - '99 C/MSA
3	DC	Washington	Nonattainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Calvert	Attainment	Attainment	Washington, DC-MD-VA-WV
3	MD	Charles	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Frederick	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Montgomery	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Prince Georges	Nonattainment	Nonattainment	Washington, DC-MD-VA-WV
3	MD	Washington	Attainment	Nonattainment	Hagerstown MD
3	VA	Alexandria	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Arlington	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Clarke	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Culpeper	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Fairfax	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Fairfax (City)	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Falls Church	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Fauquier	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Fredericksburg	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	King George	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Loudoun	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Manassas	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Manassas Park	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Prince William	Attainment	Nonattainment	Washington, DC-MD-VA-WV
3	VA	Spotsylvania	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Stafford	Attainment	Attainment	Washington, DC-MD-VA-WV
3	VA	Warren	Attainment	Attainment	Washington, DC-MD-VA-WV
3	WV	Berkeley	Nonattainment	Nonattainment	Hagerstown, MD
3	WV	Jefferson	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA
**** Counties Listed by Percent Contribution to area****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor DC C/MSA
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal	
3	MD	Montgomery	7,414	41,024	32,890	30,424	1,108	3,478	3,254	12.0
3	MD	Prince Georges	6,880	44,813	34,698	24,878	1,122	3,083	2,918	11.0
3	MD	Charles	7,916	79,120	20,928	5,146	204	1,974	4,773	9.0
3	VA	Fairfax	3,213	3,428	33,000	37,533	1,172	2,201	877	6.8
3	MD	Frederick	2,523	10,114	12,701	8,765	2,270	988	1,347	3.4
3	MD	Washington	1,822	6,256	13,064	7,379	1,556	713	938	3.2
3	VA	Prince William	1,942	22,555	16,359	10,150	528	817	881	3.3
3	DC	Washington	1,839	8,200	14,823	17,750	1,398	895	767	3.0
3	WV	Berkeley	1,390	2,554	9,099	4,303	319	558	738	1.8
3	VA	Spotsylvania	864	296	4,278	4,625	223	525	316	1.6
3	VA	Alexandria	996	15,627	10,693	4,378	280	305	552	1.5
3	VA	Loudoun	1,286	530	5,987	6,381	518	466	787	1.5
3	VA	Stafford	889	359	5,562	4,591	204	485	378	1.5
3	VA	Arlington	577	748	7,460	6,753	1,160	408	139	1.3
3	MD	Calvert	870	647	3,146	3,342	153	377	465	1.2
3	VA	Fauquier	830	239	4,082	3,711	935	401	409	1.2
3	WV	Jefferson	758	906	2,918	2,105	321	255	488	0.8
3	VA	Culpeper	488	143	1,818	2,133	441	216	243	0.7
3	VA	Warren	345	160	2,441	2,299	190	194	140	0.6
3	VA	Clarke	228	68	760	927	230	95	126	0.3
3	VA	King George	263	514	1,436	942	107	106	141	0.3
3	VA	Manassas	155	52	944	1,021	26	82	60	0.3
3	VA	Fairfax (City)	113	39	417	941	28	56	55	0.2
3	VA	Fredericksburg	83	108	1,383	1,300	40	55	22	0.2
3	VA	Falls Church	59	17	250	580	9	36	20	0.1
3	VA	Manassas Park	23	11	247	236	5	13	9	0.0

SUMMARY OF FACTOR 2: AIR QUALITY '01-'03 MSA Design Value = 16.3								
Counties Sorted by Highest to Lowest Monitored or Estimated Value								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	MD	Prince Georges	17.7	na	17.4	NA	17.3	na
3	WV	Berkeley	16.3	NA	16.2	NA	16.0	NA
3	DC	Washington	15.8	NA	16.4	NA	16.6	NA
3	VA	Arlington	14.6	A	14.9	A	14.5	a
3	MD	Washington	14.0	A	14.8	A	13.5	a
3	VA	Fairfax	14.1	A	13.9	A	14.6	a
3	VA	Loudoun	13.6	A	13.8	A	13.6	a
3	MD	Montgomery	12.6	A	13.4	A	13.5	a
3	WV	Jefferson	No monitor					
3	MD	Frederick	No monitor					
3	VA	Alexandria	No monitor					
3	VA	Clarke	No monitor					
3	VA	Fauquier	No monitor					
3	MD	Charles	No monitor					
3	VA	Prince William	No monitor					
3	VA	Warren	No monitor					
3	MD	Calvert	No monitor					
3	VA	King George	No monitor					
3	VA	Stafford	No monitor					
3	VA	Spotsylvania	No monitor					
3	VA	Culpeper	No monitor					
3	VA	Fairfax (City)	No monitor					
3	VA	Falls Church	No monitor					
3	VA	Fredericksburg	No monitor					
3	VA	Manassas	No monitor					
3	VA	Manassas Park	No monitor					

SUMMARY OF FACTOR 3A: POPULATION DENSITY AND DEGREE OF URBANIZATION

WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA

Counties sorted by highest to lowest Actual Population

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	VA	Fairfax	997,580	396	2519
3	MD	Montgomery	910,156	495	1839
3	MD	Prince Georges	833,084	486	1,714
3	DC	Washington	570,898	61	9,359
3	VA	Prince William	311,892	338	923
3	MD	Frederick	209,125	663	315
3	VA	Loudoun	204,054	520	392
3	VA	Arlington	189,927	26	7305
3	MD	Washington	134,246	458	293
3	VA	Alexandria	130,804	15	8720
3	MD	Charles	129,040	461	280
3	VA	Stafford	104,823	270	388
3	VA	Spotsylvania	102,570	401	256
3	WV	Berkeley	81,262	321	253
3	MD	Calvert	80,906	215	376
3	VA	Fauquier	59,245	650	91
3	WV	Jefferson	44,926	210	214
3	VA	Manassas	37,288	10	3729
3	VA	Culpeper	36,893	381	97
3	VA	Warren	32,910	214	154
3	VA	Fairfax (City)	22,055	6	3,676
3	VA	Fredericksburg	20,076	11	1,825
3	VA	King George	17,657	180	98
3	VA	Clarke	13,290	177	75
3	VA	Manassas Park	10,909	2	5,455
3	VA	Falls Church	10,659	2	5,330

SUMMARY OF FACTOR 3B: POPULATION DENSITY/ DEGREE OF URBANIZATION

Counties sorted by highest to lowest Population Density					
EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	DC	Washington	570,898	61	9,359
3	VA	Alexandria	130,804	15	8,720
3	VA	Arlington	189,927	26	7,305
3	VA	Manassas Park	10,909	2	5,455
3	VA	Falls Church	10,659	2	5,330
3	VA	Manassas	37,288	10	3,729
3	VA	Fairfax (City)	22,055	6	3,676
3	VA	Fairfax	997,580	396	2,519
3	MD	Montgomery	910,156	495	1,839
3	VA	Fredericksburg	20,076	11	1,825
3	MD	Prince Georges	833,084	486	1,714
3	VA	Prince William	311,892	338	923
3	VA	Loudoun	204,054	520	392
3	VA	Stafford	104,823	270	388
3	MD	Calvert	80,906	215	376
3	MD	Frederick	209,125	663	315
3	MD	Washington	134,246	458	293
3	MD	Charles	129,040	461	280
3	VA	Spotsylvania	102,570	401	256
3	WV	Berkeley	81,262	321	253
3	WV	Jefferson	44,926	210	214
3	VA	Warren	32,910	214	154
3	VA	King George	17,657	180	98
3	VA	Culpeper	36,893	381	97
3	VA	Fauquier	59,245	650	91
3	VA	Clarke	13,290	177	75

SUMMARY FACTOR 4: COMMUTING PATTERNS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA

Counties sorted by highest VMT

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	VA	Fairfax	10,532	46	242,944
3	MD	Prince Georges	7,120	60	238,274
3	MD	Montgomery	7,398	41	184,513
3	VA	Prince William	2,786	65	98,427
3	VA	Arlington	1,807	69	79,757
3	DC	Washington	3,802	26	67,157
3	VA	Alexandria	978	73	56,449
3	VA	Loudoun	1,431	57	52,719
3	MD	Frederick	2,508	39	40,199
3	MD	Charles	1,006	56	34,316
3	VA	Stafford	1,430	68	33,083
3	VA	Spotsylvania	1,270	57	25,808
3	MD	Calvert	848	50	18,711
3	VA	Fauquier	1,005	56	15,753
3	VA	Manassas	130	75	13,576
3	MD	Washington	2,249	22	13,268
3	WV	Berkeley	852	34	12,098
3	WV	Jefferson	362	51	10,665
3	VA	Fairfax (City)	124	76	9,014
3	VA	Culpeper	405	40	6,393
3	VA	Warren	339	39	6,019
3	VA	Fredericksburg	451	54	5,188
3	VA	Manassas Park	17	89	4,925
3	VA	Falls Church	32	83	4,868
3	VA	King George	263	41	3,329
3	VA	Clarke	252	41	2,701

SUMMARY FACTOR 4: COMMUTING PATTERNS
WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA

Counties Sorted by Highest Number of Commuters

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	VA	Fairfax	10,532	46	242,944
3	MD	Prince Georges	7,120	60	238,274
3	MD	Montgomery	7,398	41	184,513
3	VA	Prince William	2,786	65	98,427
3	VA	Arlington	1,807	69	79,757
3	DC	Washington	3,802	26	67,157
3	VA	Alexandria	978	73	56,449
3	VA	Loudoun	1,431	57	52,719
3	MD	Frederick	2,508	39	40,199
3	MD	Charles	1,006	56	34,316
3	VA	Stafford	1,430	68	33,083
3	VA	Spotsylvania	1,270	57	25,808
3	MD	Calvert	848	50	18,711
3	VA	Fauquier	1,005	56	15,753
3	VA	Manassas	130	75	13,576
3	MD	Washington	2,249	22	13,268
3	WV	Berkeley	852	34	12,098
3	WV	Jefferson	362	51	10,665
3	VA	Fairfax (City)	124	76	9,014
3	VA	Culpeper	405	40	6,393
3	VA	Warren	339	39	6,019
3	VA	Fredericksburg	451	54	5,188
3	VA	Manassas Park	17	89	4,925
3	VA	Falls Church	32	83	4,868
3	VA	King George	263	41	3,329
3	VA	Clarke	252	41	2,701

SUMMARY FACTOR 5: EXPECTED GROWTH**WASHINGTON, DC MSA/ PART OF WASHINGTON DC CMSA MSA****Counties Sorted by Highest Growth Rate**

EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	VA	Loudoun	204,054	83,470	97	-217	-15
3	VA	Spotsylvania	102,570	32,992	57	204	16
3	VA	Manassas Park	10,909	3,556	53		
3	VA	Stafford	104,823	31,210	51	-225	-16
3	MD	Calvert	80,906	23,191	45	144	17
3	VA	Prince William	311,892	65,127	30	999	36
3	MD	Frederick	209,125	45,069	30	-311	-12
3	WV	Berkeley	81,262	16,652	28	-111	-13
3	VA	Manassas	37,288	7,178	26		
3	VA	King George	17,657	3,276	24	50	19
3	VA	Culpeper	36,893	6,471	23	46	11
3	VA	Warren	32,910	5,442	21	-1	0
3	MD	Charles	129,040	19,392	19	-77	-8
3	VA	Fairfax	997,580	151,165	18	1,653	16
3	WV	Jefferson	44,926	6,264	17	123	34
3	MD	Montgomery	910,156	116,314	15	2,258	31
3	VA	Alexandria	130,804	17,100	15	649	66
3	VA	Fauquier	59,245	6,398	13	16	2
3	VA	Arlington	189,927	18,517	11	693	38
3	MD	Prince Georges	833,084	72,247	10	2,023	28
3	VA	Fairfax (City)	22,055	1,876	10	163	131
3	MD	Washington	134,246	10530	9	4,754	4
3	VA	Falls Church	10,659	799	8		
3	VA	Clarke	13,290	551	5	-41	-16
3	VA	Fredericksburg	20,076	252	1		
3	DC	Washington	570,898	-34,841	-6	738	19

Factor 8: Jurisdictional Boundaries

The Baltimore-Washington CMSA has recently been designated nonattainment for the 8-hour ozone standard. In those designations, the CMSA was divided along MSA boundaries. These boundaries will also be used for the PM_{2.5} designations. These areas are the Baltimore MSA, the Washington DC MSA, and the Hagerstown-Martinsburg MSA. These three areas are under the jurisdiction of separate planning organizations. The nonattainment boundaries that EPA intends to use will facilitate planning for ozone and PM_{2.5} by these separate organizations.

Factor 9: Level of Control of emission sources

Virginia submitted additional information on the control of emissions in Prince William County. EPA reviewed the additional information. The emissions contribution from point sources have been reduced based on control technology installed in 2002. Population and commuting patterns, however, still indicate that Prince William is a significant contributor to the violations in the DC nonattainment area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is nine Virginia Counties and cities as the Virginia portion of the Washington, DC nonattainment area.

6.3.6 EPA 9-Factor Analyses for West Virginia for the Designation of PM_{2.5} Nonattainment Areas

The fourth column of the following table identifies the individual counties within West Virginia that EPA intends to designate as nonattainment.

Area	West Virginia Counties in 1999 Metropolitan Statistical Area	State of West Virginia Recommendation	PM_{2.5} Designation
Charleston	Kanawha Putnam	Kanawha Putnam	Kanawha Putnam
Huntington, WV-KY-OH	Cabell Wayne	Cabell Wayne	Cabell Wayne Mason *
Marion County, WV (Fairmont)	Marion	Marion	Marion Monongalia * Harrison *
Parkersburg, WV-OH	Wood	Wood	Wood Pleasants *
Steubenville, OH-WV	Brooke Hancock	Brooke Hancock	Brooke Hancock

Hagerstown, MD	Berkeley (Washington,MD)	Berkeley	Berkeley
Wheeling, WV-OH	Marshall Ohio	Marshall Ohio	Marshall Ohio
Total Number of Counties	11	11	15

*Portions of these counties are being designated as nonattainment.

* We have included in our recommended nonattainment areas a county or counties in your state that are contiguous to a CMSA or MSA with a violating monitor, that are generally rural in character, and that contain an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included these counties in our initial recommendations in order to ensure that a sufficient portion of those counties, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of such contiguous counties, encompassing the large facility or facilities, should be designated nonattainment. The counties in your state, which we have included for this purpose, are Mason, Harrison, Monongalia, and Pleasants.

State Summary

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended 12 counties as nonattainment. Additional data was provided by West Virginia on June 3, 2004. In the June 3 correspondence, West Virginia revised its recommendation to 11 counties; excluding Jefferson County from the nonattainment recommendation.

Based on the air quality data for the years 2001-2003, there are seven presumptive fine particulate (PM_{2.5}) nonattainment areas consisting of 11 counties in West Virginia. EPA agrees with the recommendation that all 11 counties be designated nonattainment. In addition, EPA intends to modify the recommendations for the Charleston, Marion County, and Parkersburg areas with the addition of four adjacent counties. The following provides a rationale for EPA's intended modification to the West Virginia recommendations.

6.3.6.1 Charleston Area

Discussion

The Charleston Metropolitan Statistical Area (MSA) is comprised of two counties: Putnam and Kanawha. Kanawha County, part of the MSA has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Charleston MSA is considered a presumptive nonattainment area. Kanawha County has monitored 17.1 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Charleston nonattainment area.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended the two MSA counties to be included in the Charleston nonattainment area. EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, 2004 and agrees with the original recommendation. EPA agrees with the recommendation to include these two counties. EPA, however, intends to add an adjacent county, Mason, to the nonattainment area.

Summary of Evaluation

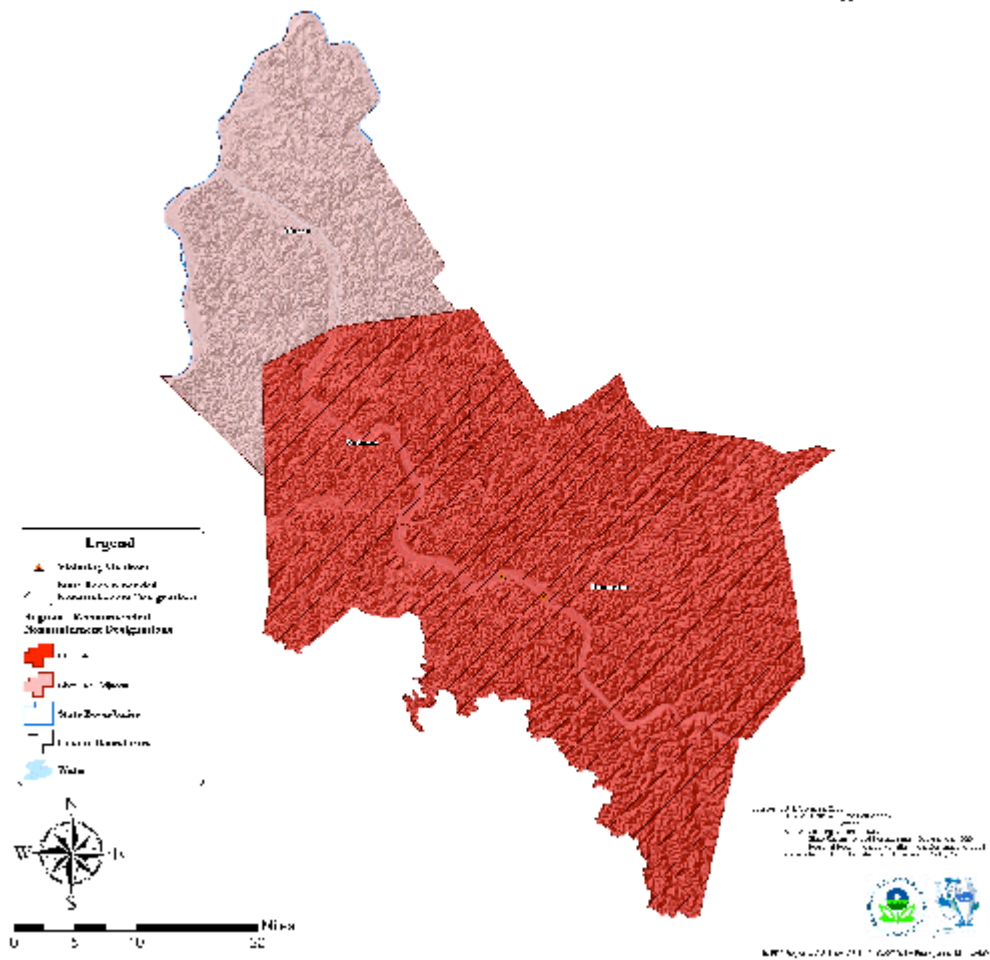
Based on weighted emissions screening, EPA has identified Jackson, Roane, Clay, Nicholas, Fayette, Raleigh, Boone and Lincoln to have relatively low emissions contribution to the metropolitan area. A review of the remaining factors, including monitored attainment in Raleigh County, provides additional evidence for the designation of attainment for these surrounding counties.

Mason and Putnam Counties, however, show higher contributions to the area, based on the weighted emissions factor. Therefore, EPA has reviewed these counties based on the remaining 8 factors to determine the appropriate designation. Putnam County, part of the MSA, and Mason, an adjacent county, show comparable emissions and similar air quality estimates. The population density and commuting patterns of Mason when compared to the core MSA counties in this area are not, however, substantial.

As seen in the attached data summary, considering wind and distance, Mason County has twice the estimated emission contribution as the next highest attainment county. Mason County is located between the Huntington presumptive nonattainment area and the Charleston presumptive nonattainment area. The addition of Mason County to the Charleston area creates a contiguous area.

As seen in the topographic map below, the natural advective air flow along the Kanawha River valley may also enhance the contribution of emissions from Mason County into the nonattainment area.

Charleston Area PM_{2.5} Recommended Nonattainment Designations



EPA intends, based on this review, to modify the West Virginia recommended nonattainment boundary and include Mason County with the Charleston MSA. A summary of the data that supports the addition of Mason County to the State's recommendation is provided below.

SUMMARY OF CHARLESTON, WV MSA					
EPA Reg	ST	COUNTY	State Recommend PM2.5 Designation	PM2.5 DESIGNATION	Area - '99 C/MSA
3	WV	Putnam	Nonattainment	Nonattainment	Charleston, WV
3	WV	Kanawha	Nonattainment	Nonattainment	Charleston, WV
3	WV	Mason	Attainment	Nonattainment	(Huntington)
3	WV	Fayette	Attainment	Attainment	
3	WV	Raleigh	Attainment	Attainment	
3	WV	Jackson	Attainment	Attainment	
3	WV	Nicholas	Attainment	Attainment	
3	WV	Boone	Attainment	Attainment	
3	WV	Lincoln	Attainment	Attainment	
3	WV	Roane	Attainment	Attainment	
3	WV	Clay	Attainment	Attainment	
3	WV	Logan	Attainment	Attainment	
3	WV	Wyoming	Attainment	Attainment	
3	WV	Mingo	Attainment	Attainment	
3	WV	Braxton	Attainment	Attainment	
3	WV	Calhoun	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS CHARLESTON, WV MSA Counties sorted by Largest Weighted Emissions Contribution										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO ₂	NO _x	VOC	Amm	Carbon	Crustal	
3	WV	Putnam	4,395	80,150	39,795	3,752	97	1,165	2,604	20.3
3	WV	Kanawha	2,683	24,109	27,119	16,506	396	1,266	1,182	18.0
3	WV	Cabell	2,365	5,155	27,903	7,080	181	1,318	774	17.7
3	WV	Mason	3,610	70,053	31,327	2,831	264	899	2,162	16.2
3	WV	Fayette	1,536	4,485	5,065	3,134	100	479	950	6.3
3	WV	Raleigh	930	456	4,595	5,220	170	472	417	6.0
3	WV	Jackson	1,780	3,464	3,947	2,394	158	451	1,128	5.9
3	WV	Wayne	550	1,023	6,485	2,620	56	317	199	4.2
3	WV	Logan	410	152	1,620	2,158	49	214	181	2.7
3	WV	Nicholas	434	193	1,102	1,720	84	206	208	2.6
3	WV	Wyoming	470	430	3,981	1,807	142	197	238	2.6
3	WV	Boone	412	118	1,571	1,298	30	197	190	2.5
3	WV	Mingo	437	281	2,842	1,379	150	191	217	2.5
3	WV	Braxton	312	138	2,265	1,597	91	185	109	2.4
3	WV	Lincoln	259	67	1,314	1,128	37	143	108	1.8
3	WV	Roane	213	106	1,083	1,108	99	119	87	1.5
3	WV	Clay	155	41	533	542	28	94	57	1.2
3	WV	Calhoun	114	43	937	512	35	68	42	0.9

SUMMARY OF FACTOR 2: AIR QUALITY CHARLESTON ,WV MSA									
EPA Reg	ST	COUNTY	Design Values						
			'01-'03		'00-'02		'99-'01		
3	WV	Putnam	NO MONITOR						
3	WV	Kanawha	17.1	NA	17.8	NA	18.4	NA	
3	WV	Mason	NO MONITOR						
3	WV	Fayette	NO MONITOR						
3	WV	Raleigh	13.1	A	13.5	A	14.0	A	
3	WV	Jackson	NO MONITOR						
3	WV	Nicholas	NO MONITOR						
3	WV	Boone	NO MONITOR						
3	WV	Lincoln	NO MONITOR						
3	WV	Roane	NO MONITOR						
3	WV	Clay	NO MONITOR						

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE
OF URBANIZATION
CHARLESTON, WV MSA**

Counties Sorted by Population - Highest to Lowest

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	WV	Kanawha	195,790	903	217
3	WV	Raleigh	78,899	607	130
3	WV	Putnam	52,230	346	151
3	WV	Fayette	47,129	664	71
3	WV	Jackson	28,204	466	61
3	WV	Nicholas	26,404	649	41
3	WV	Mason	26,004	432	60
3	WV	Boone	25,554	503	51
3	WV	Lincoln	22,256	438	51
3	WV	Roane	15,267	484	32
3	WV	Clay	10,357	342	30

**SUMMARY FACTOR 4: COMMUTING PATTERNS
CHARLESTON, WV MSA**

Counties sorted by VMT - Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	WV	Kanawha	2,600	4	3,500
3	WV	Raleigh	1,028	2	643
3	WV	Fayette	605	12	1,904
3	WV	Putnam	578	48	11,367
3	WV	Jackson	511	19	2,152
3	WV	Nicholas	359	5	468
3	WV	Boone	300	35	2,972
3	WV	Mason	270	8	763
3	WV	Roane	183	25	1,319
3	WV	Lincoln	154	33	2,324
3	WV	Clay	116	30	925

SUMMARY FACTOR 5: EXPECTED GROWTH CHARLESTON, WV MSA Counties sorted by Growth Rate - Highest to Lowest							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	WV	Putnam	52,230	8,754	20	53	9
3	WV	Jackson	28,204	2,062	8	-231	-45
3	WV	Mason	26,004	779	3	23	9
3	WV	Raleigh	78,899	2,401	3	-199	-19
3	WV	Lincoln	22,256	726	3	141	92
3	WV	Clay	10,357	347	3	21	19
3	WV	Roane	15,267	326	2	26	14
3	WV	Fayette	47,129	-373	-1	-18	-3
3	WV	Nicholas	26,404	-213	-1	-50	-14
3	WV	Boone	25,554	-335	-1	24	8
3	WV	Kanawha	195,790	-7,546	-4	432	17

Factor 8: Jurisdictional Boundaries

The 1999 MSA was expanded in 2003 to include Lincoln, Boone and Clay counties. The review of these counties, however, did not provide sufficient evidence to include these counties in the nonattainment area. The Charleston area has recently been designated nonattainment for the 8-hour ozone standard. Similar to the fine particulate monitoring, Kanawha monitored a violation of the 8-hour ozone standard. Kanawha and Putnam were included in the ozone nonattainment area.

Factor 9: Level of Control

EPA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate. This screening identified the closest large source to be 37 miles from the Kanawha violating monitor. West Virginia has provided additional information on the level of control of the Mountaineer and Philip Sporn power plants. There was a reduction in NO_x in 2002 due to installation of NO_x controls on the Mountaineer plant (1300 MW). Additional SO₂ controls are also planned in 2007 for this plant. The Philip Sporn plant (1050 MW) does not currently, nor has plans to install, state-of-the-art controls. A review of the reductions from the controls added to Mountaineer does not substantially change the estimated emissions contribution to the nonattainment area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Mason County was an adjacent county proposed to be included with the nonattainment area largely because of the emissions from two power plants. The State of West Virginia has provided additional information and rationale for including a portion of the County containing the power plants to the adjacent Huntington-Ashland nonattainment area. The

two power plants, Mountaineer and Philip Sporn, are located at the northern edge of Mason County. Apart from the emissions of the power plants the County is mostly rural and the parameters of the factors relating to population, vehicle miles traveled and commuting rank well below the factors for the two counties in the Charleston MSA. The partial county associated with the Huntington-Ashland area is described in section 6.3.6.2.

EPA is designating Putnam and Kanawha as the Charleston nonattainment area.

6.3.6.2 Huntington Ashland (KY-WV-OH) Area

Discussion

The Huntington Metropolitan Statistical Area (MSA) is comprised of six counties including two counties in West Virginia. Two counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Huntington MSA is considered a presumptive nonattainment area. Cabell County, WV is part of the MSA and monitored 16.6 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended the two MSA counties to be included in the Huntington nonattainment area. EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, EPA agrees with the recommendation to include Cabell and Wayne Counties. Additional counties in Kentucky and Ohio have been reviewed and designated by EPA Regions 4 and 5, respectively. A summary of the designations is found in the table below; however, data and analysis on those counties are found in separate documents generated by each respective region.

Summary of Evaluation

Based on weighted emissions, EPA estimates that Mingo and Lincoln counties, adjacent to the Huntington MSA have relatively low emissions contribution to the metropolitan area. A review of the remaining factors provided additional evidence for the designation of attainment for these surrounding counties.

Data supporting EPA's intended designation for the West Virginia counties as part of the Huntington nonattainment area is provided below.

Summary Huntington-Ashland, WV-KY-OH MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	PM _{2.5} Designation	Area - '99 C/MSA
4	KY	Boyd	"Defer"	Nonattainment	Huntington-Ashland, WV-KY-OH
3	WV	Cabell	Nonattainment	Nonattainment	Huntington-Ashland, WV-KY-OH
4	KY	Carter	Attainment	Attainment	Huntington-Ashland, WV-KY-OH
4	KY	Greenup	Attainment	Attainment	Huntington-Ashland, WV-KY-OH
5	OH	Lawrence	Nonattainment	Nonattainment	Huntington-Ashland, WV-KY-OH
3	WV	Wayne	Nonattainment	Nonattainment	Huntington-Ashland, WV-KY-OH
5	OH	Adams	Attainment	Nonattainment	
4	KY	Elliott	Attainment	Attainment	
5	OH	Gallia	Attainment	Nonattainment	
5	OH	Jackson	Attainment	Attainment	
4	KY	Lawrence	Attainment	Nonattainment	
4	KY	Lewis	Attainment	Attainment	
3	WV	Lincoln	Attainment	Attainment	Adjacent County
4	KY	Martin	Attainment	Attainment	
3	WV	Mingo	Attainment	Attainment	Adjacent County
5	OH	Pike	Attainment	Attainment	
4	KY	Rowan	Attainment	Attainment	
5	OH	Scioto	Nonattainment	Nonattainment	Adjacent County with Violating Monitor

SUMMARY OF FACTOR 1: EMISSIONS Huntington-Ashland, WV-KY-OH MSA											
** Counties Listed by Percent Contribution to Harrisburg CMSA**											
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor	PM_{2.5} Designation
			PM	SO₂	NOX	VOC	Amm	Carbon	Crustal		
5	OH	Gallia	10,010	164,984	61,079	1,839	300	2,171	6,238	141.4	Nonattainment
5	OH	Adams	6,417	125,136	52,992	1,508	431	1,435	3,973	102.4	Nonattainment
5	KY	Lawrence	2,903	56,066	21,265	919	56	745	1,718	48.3	Nonattainment
3	WV	Cabell	2,365	5,155	27,903	7,080	181	1,318	774	40.3	Nonattainment
5	KY	Boyd	2,314	11,740	13,478	8,620	467	689	1,242	25.2	Nonattainment
5	OH	Scioto	1,053	2,790	5,566	4,703	350	400	559	12.5	Nonattainment
3	WV	Wayne	550	1,023	6,485	2,620	56	317	199	9.6	Nonattainment
5	KY	Greenup	477	2,519	4,336	1,795	156	295	160	9.5	Attainment
5	OH	Lawrence	770	841	4,399	4,366	207	293	379	8.6	Nonattainment
5	KY	Lewis	429	469	2,873	990	222	285	121	8.1	Attainment
5	KY	Carter	506	237	2,615	1,996	223	242	249	6.8	Attainment
5	OH	Pike	425	4,203	2,081	1,311	149	172	237	6.8	Attainment
5	KY	Rowan	336	313	1,691	1,535	91	204	123	5.7	Attainment
3	WV	Mingo	437	281	2,842	1,379	150	191	217	5.5	Attainment
5	OH	Jackson	404	461	1,320	1,717	165	164	219	4.7	Attainment
5	KY	Martin	281	661	1,236	706	762	136	131	4.0	Attainment
3	WV	Lincoln	259	67	1,314	1,128	37	143	108	4.0	Attainment
5	KY	Elliott	164	115	393	313	42	114	46	3.1	Attainment

SUMMARY OF FACTOR 2: AIR QUALITY Huntington-Ashland, WV-KY-OH MSA										
EPA Reg	ST	COUNTY	Design Values							
			'01-'03		'00-'02		'99-'01			
4	KY	Boyd	15.0	A	15.7	NA	15.5	NA		
3	WV	Cabell	16.6	NA	17.3	NA	17.8	NA		
4	KY	Carter	12.2	A	13.1	A	12.9	A		
4	KY	Greenup	No Monitor							
5	OH	Lawrence	15.8	NA	16.7	NA	17.4	na		
3	WV	Wayne	No Monitor							
5	OH	Scioto	17.2	NA	17.5	NA	20.0	NA		
Region III in agreement with West Virginia Recommendation for Huntington MSA										

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA expressed intent to designate a number of counties nonattainment primarily because of high pollutant emissions from power plants. Most of these plants were located in counties outside but near to the metropolitan area. EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas), or where the source is not located close enough to where the partial county boundary could be contiguous to the rest of the nonattainment area. Such free-standing portions of nonattainment areas should only be established based on a pre-existing boundary for a minor civil division such as a township, tax district, or other defined boundary recognized for other governmental use. Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility.

As noted in section 6.3.6.1 above, after consultation with the State of West Virginia EPA has added the portion of Mason County which contains the Mountaineer and Philip Sporn power plants to the Huntington-Ashland area. Mason County has population, vehicle miles traveled and commuting factors which are lower than the factors for the six counties in the three-state MSA. The primary reason for including the adjacent county of Mason is the contribution of emissions from two power plants. The state of West Virginia has submitted, as requested, an identification of a partial county to include the Mountaineer and Philip Sporn power plants. In Mason County the Tax District of Graham is nonattainment. The remainder of Mason County is attainment/unclassifiable.

Tax District Boundaries were selected as the minor civil division to identify partial county areas. Tax district boundary lines were adopted by the West Virginia Legislature in 1978 as a general reference to delineate rural tax district boundaries. The boundaries were drawn from 1:24,000-scale USGS topographic maps in 1978 and coincide with county magisterial districts as of July 1, 1973. Unlike magisterial districts that are realigned every ten years following the census, the tax district boundary does not follow equal representation requirements.

6.3.6.3 Marion Area (Fairmont CSA)

Discussion

The Marion area is a county that is not part of a 1999 Metropolitan Statistical area. In 2003, however, the Office of Management and Budget (OMB) delineated new boundaries using the 2000 Census Data. Marion was included in the Fairmont CBSA in 2003. Harrison and Preston Counties, part of the 2003 Clarksburg CBSA are included with Marion in the larger 2003 Combined Statistical Area (CSA). Marion County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Fairmont CSA is considered a presumptive nonattainment area. Marion County has monitored 15.4 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Marion nonattainment area.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended the single county as a nonattainment area EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, 2004. EPA agrees with the recommendation for Marion County, however, EPA intends to add two adjacent counties, Harrison and Monongalia, to the nonattainment area.

Summary of Evaluation

Based on weighted emissions screening, EPA has identified Wetzel County and Taylor County to have relatively low emissions contribution to the metropolitan area. Review of the remaining factors, provides additional evidence for the designation of attainment for these surrounding counties.

Harrison, Preston and Monongalia counties, however, show higher contribution to the area, based on the weighted emissions factor. Population density and commuting patterns are relatively small in this rural area. Although both Harrison and Monongalia have monitored attainment, estimates show potential exceedances of the standard in other parts of Monongalia County. The actual emissions from Harrison and Monongalia counties, are estimated to substantially contribute to the monitored violations in Marion County when reviewed with topography and meteorology. EPA intends to modify the West Virginia recommended nonattainment boundary and include Harrison and Monongalia counties with the Marion MSA. A summary of the data that supports the modification of the State's recommendation is provided below.

SUMMARY OF MARION, WV AREA					
EPA Reg	ST	COUNTY	State Recommend PM_{2.5} Designation	PM_{2.5} Designation	Area - '99 C/MSA N/A 2003 CBSA Area Listed
<input type="checkbox"/>					
3	WV	Marion	Nonattainment	Nonattainment	Fairmount CBSA
3	WV	Monongalia	Attainment	Nonattainment	Morgantown, WV CBSA
3	WV	Harrison	Attainment	Nonattainment	Clarksburg, WV CBSA
3	WV	Wetzel	Attainment	Attainment	
3	WV	Taylor	Attainment	Attainment	Clarksburg, WV CBSA

SUMMARY OF FACTOR 1: EMISSIONS MARION, WV AREA										
** Counties Listed by Percent Contribution to area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
3	WV	Monongalia	5,459	81,413	17,545	5,606	185	1,320	3,331	54.7
3	WV	Harrison	2,781	7,671	35,477	4,641	240	657	1,748	28.1
3	WV	Preston	1,715	21,864	6,528	1,874	271	465	1,021	17.4
3	WV	Marion	777	7,953	6,069	3,075	102	295	413	10.0
3	WV	Wetzel	260	698	4,323	1,720	45	160	79	4.8
3	WV	Lewis	244	372	4,095	1,795	123	143	87	4.3
3	WV	Upshur	342	141	1,583	1,676	90	178	150	4.0
3	WV	Barbour	294	84	800	740	200	131	145	2.8
3	WV	Tyler	292	176	1,233	1,869	44	122	126	2.8
3	WV	Taylor	253	416	2,595	721	67	73	128	2.5
3	WV	Ritchie	166	118	713	636	75	97	63	2.1
3	WV	Gilmer	122	24	1,088	640	47	73	44	1.8
3	WV	Doddridge	123	30	798	434	39	73	46	1.7

SUMMARY OF FACTOR 2: AIR QUALITY MARION, WV AREA								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	WV	Marion	15.4	NA	15.7	NA	15.9	na
3	WV	Monongalia	14.9	A	15.0	A	15.0	A
3	WV	Harrison	14.0	A	14.5	A	14.8	A

SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF UBANIZATION MARION, WV AREA					
EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	WV	Marion	56,433	310	182
3	WV	Monongalia	82,895	361	230
3	WV	Harrison	67,856	416	163

SUMMARY FACTOR 4: COMMUTING PATTERNS MARION, WV AREA					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	WV	Marion	475		
3	WV	Monongalia	810	3	1,234
3	WV	Harrison	707	6	1,651

SUMMARY FACTOR 5: EXPECTED GROWTH MARION, WV AREA							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	WV	Marion	56,433	-651	-1	95	20
3	WV	Monongalia	82,895	6,357	8	-180	-22
3	WV	Harrison	67,856	-719	-1	-47	-7

Factor 8: Jurisdictional Boundaries

The 1999 MSA was expanded in 2003 to include Harrison, Taylor and Doddridge Counties. The review of Taylor and Doddridge Counties, however, did not provide sufficient evidence to include these counties in the nonattainment area.

Factor 9: Level of Control

EPA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate. There are large uncontrolled sources in Monongalia and Harrison counties.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA expressed intent to designate a number of counties nonattainment primarily because of high pollutant emissions from power plants. Most of these plants were located in counties outside but near to the metropolitan area. EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas), or where the source is not located close enough to where the partial county boundary could be contiguous to the rest of the nonattainment area. Such free-standing portions of nonattainment areas should only be established based on a pre-existing boundary for a minor civil division such as a township, tax district, or other defined boundary recognized for other governmental use. Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility.

All of the counties in the proposed Marion County (AKA Fairmont CBSA) nonattainment area are predominantly rural in nature. The primary reason for including the adjacent counties of Monongalia and Harrison is the contribution of emissions from power plants. The state of West Virginia has submitted, as requested, an identification of partial counties to include the Fort Martin and Harrison power plants. In Monongalia County the Tax District of Cass is nonattainment. The remainder of Monongalia County is attainment/unclassifiable. In Harrison County the Tax District of Clay and Eagle is nonattainment. The remainder of Harrison County is attainment/unclassifiable.

Tax District Boundaries were selected as the minor civil division to identify partial county areas. Tax district boundary lines were adopted by the West Virginia Legislature in 1978 as a general reference to delineate rural tax district boundaries. The boundaries were drawn from 1:24,000-scale USGS topographic maps in 1978 and coincide with county magisterial districts as of July 1, 1973. Unlike magisterial districts that are realigned every ten years following the census, the tax district boundary does not follow equal representation requirements.

6.3.6.4 Parkersburg Area

Discussion

The Parkersburg Metropolitan Statistical Area (MSA) is comprised of two counties: Wood County, WV and Washington County, OH. Wood County, part of the MSA has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Parkersburg MSA is considered a presumptive nonattainment area. Wood County has monitored 16.0 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Parkersburg nonattainment area. Review of the Ohio counties has been done by EPA Region 5 and is specified in documentation generated by that Region. The EPA intended designation for Ohio counties is provided in the table below.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended Wood County to be included in the Parkersburg nonattainment area. EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, 2004 and agrees with the recommendation for Wood County, however, EPA intends to add an adjacent county, Pleasants County, WV, to the nonattainment area.

Summary of Evaluation

Based on weighted emissions screening, EPA has identified Tyler, Ritchie, and Roane and Calhoun counties in West Virginia to have relatively low emissions contribution to the metropolitan area. Review of the remaining factors provided additional evidence for the designation of attainment for these surrounding counties.

Pleasants and Wirt counties were added to the Parkersburg metropolitan area in the revised 2003 OMB metropolitan definition. Closer examination highlights the emissions contribution by Pleasants County to the area. Wirt County, in contrast, has low estimated emissions contribution to the area.

Wood County, part of the MSA, and Pleasants County, an adjacent county, show comparable emissions and similar air quality estimates. The population density and commuting patterns of Pleasants when compared to the core MSA counties in this area are not, however, substantial. The geography, however, does provide supporting information for designation of nonattainment as a contributing county. A small portion of Pleasants County juts into the metropolitan area. This portion of the county contains a major emitting source. EPA intends, based on this review, to modify the West Virginia recommended nonattainment boundary and include Pleasants County with the Parkersburg MSA. A summary of the data that supports the addition of Pleasants County to the State's recommendation is provided below.

Parkersburg WV-OH MSA					
EPA Reg	ST	COUNTY	State Recommend PM_{2.5} Designation	PM_{2.5} Designation	Area - '99 C/MSA
5	OH	Washington	Attainment	Nonattainment	Parkersburg-Marietta, WV-OH
3	WV	Wood	Nonattainment	Nonattainment	Parkersburg-Marietta, WV-OH
5	OH	Athens	Attainment	Attainment	
3	WV	Calhoun	Attainment	Attainment	
3	WV	Jackson	Attainment	Attainment	
5	OH	Meigs	Attainment	Attainment	
5	OH	Monroe	Attainment	Attainment	
5	OH	Morgan	Attainment	Attainment	
5	OH	Noble	Attainment	Attainment	
3	WV	Pleasants	Attainment	Nonattainment	Parkersburg 2003 CBSA
3	WV	Ritchie	Attainment	Attainment	
3	WV	Roane	Attainment	Attainment	
3	WV	Tyler	Attainment	Attainment	
3	WV	Wirt	Attainment	Attainment	Parkersburg 2003 CBSA

**SUMMARY OF FACTOR 1: EMISSIONS
PARKERSBURG WV-OH MSA**

**** Counties Listed by Percent Contribution to area****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
5	OH	Washington	10,743	173,312	37,020	5,274	565	2,415	6,711	48.4
3	WV	Pleasants	2,602	68,264	23,398	1,337	29	823	1,411	17.7
3	WV	Wood	1,144	6,514	6,943	7,148	243	591	482	10.3
3	WV	Jackson	1,780	3,464	3,947	2,394	158	451	1,128	7.7
5	OH	Athens	417	733	3,166	2,400	204	176	222	3.1
5	OH	Monroe	715	4,532	2,809	1,166	230	162	504	3.0
5	OH	Meigs	309	375	2,244	1,051	164	147	145	2.5
3	WV	Tyler	292	176	1,233	1,869	44	122	126	2.1
3	WV	Ritchie	166	118	713	636	75	97	63	1.6
5	OH	Morgan	217	81	558	921	228	88	122	1.5
5	OH	Noble	219	144	1,622	1,377	197	87	127	1.5
3	WV	Wirt	84	19	206	406	45	46	36	0.8
3	WV	Roane	213	106	1,083	1,108	99	119	87	2.0
3	WV	Calhoun	114	43	937	512	35	68	42	1.2

**SUMMARY OF FACTOR 2: AIR QUALITY
PARKERSBURG WV-OH MSA**

EPA Reg	ST	COUNTY	Design Values					
			'01-'03	'00-'02	'99-'01			
5	OH	Washington	No monitor					
3	WV	Wood	16.0	NA	17.0	NA	17.6	NA
3	WV	Pleasants	No monitor					
3	WV	Wirt	No monitor					

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF
UBANIZATION
PARKERSBURG WV-OH MSA**

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
5	OH	Washington	62,561	635	99
3	WV	Wood	87,306	367	238
3	WV	Pleasants	7,579	131	58
3	WV	Wirt	5,935	233	25

SUMMARY FACTOR 4: COMMUTING PATTERNS PARKERSBURG WV-OH MSA					
EPA Reg	ST	COUNTY	VT	Commuting to Other Metro Counties	
			2002	Percent	Number
5	OH	Washington	737	21	5,927
3	WV	Wood	911	9	3,316
3	WV	Pleasants	78	35	1,026
3	WV	Wirt	44	54	1,215

SUMMARY FACTOR 5: EXPECTED GROWTH PARKERSBURG WV-OH MSA							
EPA Reg	ST	COUNTY	Population			VT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
5	OH	Washington	62,561	997	2	19	3
3	WV	Wood	87,306	1,071	1	108	12
3	WV	Pleasants	7,579	-32	-0	26	33
3	WV	Wirt	5,935	681	13	28	64

Factor 8: Jurisdictional Boundaries

The 1999 MSA was expanded in 2003 to include Pleasants and Wirt counties. The review of Wirt County, however, did not provide sufficient evidence to include these counties in the nonattainment area.

The Parkersburg area has recently been designated nonattainment for the 8-hour ozone standard. Wood County, WV and Washington County, OH both monitored violations of the ozone standard.

Factor 9: Level of Control

EPA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate. This screening identified the Pleasants Power Plant 13 miles from the violating monitor. West Virginia has provided additional information on the level of control of the Pleasants plant. Additional NOX controls have recently been added to the power plant. The 1200 MW plant is now well controlled. There is a 15% scrubber bypass currently operating on the plant, however. The much smaller Willow Island power plant (228 MW) is located in Pleasants County and is not well controlled.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA expressed intent to designate a number of counties nonattainment primarily because of high pollutant emissions from power plants. Most of these plants were

located in counties outside but near to the metropolitan area. EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas), or where the source is not located close enough to where the partial county boundary could be contiguous to the rest of the nonattainment area. Such free-standing portions of nonattainment areas should only be established based on a pre-existing boundary for a minor civil division such as a township, tax district, or other defined boundary recognized for other governmental use. Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility.

All of the counties in the proposed Parkersburg nonattainment area are predominantly rural in nature. The primary reason for including the adjacent county of Pleasants is the contribution of emissions from the Pleasants power plant. The state of West Virginia has submitted, as requested, an identification of partial counties to include the power plant. In Pleasants County the Tax District of Grant is nonattainment. The remainder of Pleasants County is attainment/unclassifiable.

Tax District Boundaries were selected as the minor civil division to identify partial county areas. Tax district boundary lines were adopted by the West Virginia Legislature in 1978 as a general reference to delineate rural tax district boundaries. The boundaries were drawn from 1:24,000-scale USGS topographic maps in 1978 and coincide with county magisterial districts as of July 1, 1973. Unlike magisterial districts that are realigned every ten years following the census, the tax district boundary does not follow equal representation requirements.

EPA is designating Wood and part of Pleasants counties as the West Virginia portion of the Parkersburg nonattainment area.

6.3.6.5 Steubenville OH-WV Area

Discussion

The Steubenville-Weirton MSA includes three counties. Two counties in West Virginia, Brooke and Hancock, as well as Jefferson County, OH. The surrounding counties have been evaluated and designated as part of the Pittsburgh and Wheeling nonattainment areas. Hancock and Brooke counties both monitored violations of the fine particulate (PM_{2.5}) National Ambient Air

Quality Standard (NAAQS) of 15.0 $\mu\text{g}/\text{m}^3$. Based on the monitored violations, the Steubenville MSA is considered a presumptive nonattainment area. Jefferson County, OH has monitored 17.8 $\mu\text{g}/\text{m}^3$ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Steubenville nonattainment area.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended Hancock and Brooke counties as part of the Steubenville nonattainment area. EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, 2004. EPA agrees with the recommendation.

Summary of Evaluation

Both counties recommended by the State have monitored violations of the standard. Adjacent counties are for the most part have been analyzed under other metropolitan areas. Data supporting EPA's intended nonattainment boundaries and West Virginia's recommendation is provided below.

STATUS OF STEUBENVILLE MSA AND SURROUNDING AREA							
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	PM _{2.5} Designation	Area - '99 C/MSA		
eparegion	stpostal	county_name	state_rec	msa_name			
C/MSA Total (excluding surrounding) = 3 counties							
3	WV	Brooke	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV		
3	WV	Hancock	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV		
5	OH	Jefferson	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV		
3	PA	Beaver	Nonattainment	Nonattainment	Pittsburgh, PA		
5	OH	Belmont	Attainment	Nonattainment	Wheeling, WV-OH		
5	OH	Columbiana	Attainment	Nonattainment	Youngstown-Warren, OH		
3	WV	Ohio	Nonattainment	Nonattainment	Wheeling, WV-OH		
3	PA	Washington	Nonattainment	Nonattainment	Pittsburgh, PA		
5	OH	Carroll	Attainment	Attainment	Canton-Massillon, OH		
5	OH	Harrison	Attainment	Attainment			

SUMMARY OF FACTOR 1: EMISSIONS STEUBENVILLE MSA										
** Counties Listed by Percent Contribution to area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
5	OH	Jefferson	12,247	217,794	61,402	4,082	287	2,723	7,529	39.9
3	PA	Beaver	4,948	40,380	39,564	8,738	543	1,368	2,900	18.8
3	PA	Washington	3,011	8,221	22,097	9,392	813	1,190	1,505	12.5
5	OH	Belmont	2,797	51,374	13,036	4,211	464	734	1,667	9.6
3	WV	Hancock	4,335	1,982	4,961	3,585	571	1,243	1,747	9.4
5	OH	Columbiana	1,187	1,291	5,825	5,881	1,250	442	696	4.2
3	WV	Ohio	351	514	3,609	2,779	123	192	135	1.9
3	WV	Brooke	527	1,663	2,500	4,358	439	191	277	1.8
5	OH	Carroll	363	386	1,886	1,422	375	120	234	1.2
5	OH	Harrison	191	258	712	786	254	70	116	0.6

SUMMARY OF FACTOR 2: AIR QUALITY STEUBENVILLE MSA								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
3	WV	Brooke	16.8	NA	16.8	NA	17.4	NA
3	WV	Hancock	17.4	NA	17.5	NA	17.4	NA
5	OH	Jefferson	17.8	NA	18.2	NA	18.9	NA
The two Region 3 counties to be evaluated as part of the Steubenville MSA have monitored violations of the PM2.5 Standard. Evaluation of the remaining factors is not necessary.								

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Brooke and Hancock counties as the West Virginia portion of the Steubenville nonattainment area.

6.3.6.6 Hagerstown-Martinsville Area

Discussion

Berkeley County, WV has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, this county is considered a presumptive nonattainment area. Berkeley County has monitored 16.3 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Hagerstown nonattainment area.

Berkeley County is actually part of the large Washington-Baltimore CMSA. For planning purposes and consistency with existing ozone boundaries, EPA intends to separate Berkeley from the CMSA. The existing ozone nonattainment boundary includes Berkeley and Jefferson counties as an independent area, referred to as the Eastern WV panhandle. Berkeley County was defined by OMB in 2003 as part of the Hagerstown-Martinsville CBSA with Washington County, MD.

West Virginia recommended both Jefferson and Berkeley counties as nonattainment in the February 13, 2004 recommendation letter. On June 1, 2004, the state revised its recommendation to exclude Jefferson County. Washington County, MD has also been recommended attainment by the state of Maryland. Berkeley County has monitored violations, EPA agrees with the West Virginia recommendation of nonattainment for Berkeley County; however, EPA intends to designate Berkeley County with the Hagerstown-Martinsville CBSA following EPA April 1, 2003 guidance suggesting that single counties be included with the nearest metropolitan area.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Please see tables in Section 6.3.5.1 (Washington, DC area) for specific data on Berkeley and Washington County. After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. EPA is designating Washington County, MD and Berkeley County, WV as the Hagerstown- Martinsville nonattainment area.

6.3.6.7 Wheeling, WV-OH Area

Discussion

The Wheeling Metropolitan Statistical Area (MSA) is comprised of three counties including two counties in West Virginia. The table below lists the counties in the MSA. Two counties in this MSA, Marshall and Ohio counties in West Virginia have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Wheeling MSA is considered a presumptive nonattainment area. Marshall County, WV is part of the MSA and monitored 15.7 µg/m³ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The State of West Virginia, in the Secretary Timmermeyer correspondence of February 13, 2004, recommended the two MSA counties to be included in the Wheeling nonattainment area. EPA has reviewed the State's recommendations as well as additional data provided by West Virginia on June 3, EPA agrees with the State recommendation to include Marshall and Ohio Counties in the Wheeling nonattainment area. Belmont, Ohio has been reviewed and designated nonattainment by EPA Region 5.

SUMMARY OF FACTOR 1: EMISSIONS WHEELING, WV AREA										
** Counties Listed by Percent Contribution to area**										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions Factor
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
5	OH	Jefferson	12,247	217,794	61,402	4,082	287	2,723	7,529	119.6
3	PA	Greene	11,626	186,481	31,832	2,756	256	2,548	7,223	99.2
3	WV	Marshall	5,596	113,921	44,521	4,125	122	1,319	3,417	65.0
3	PA	Washington	3,011	8,221	22,097	9,392	813	1,190	1,505	35.4
5	OH	Belmont	2,797	51,374	13,036	4,211	464	734	1,667	29.5
5	OH	Guernsey	503	1,164	5,643	3,602	367	229	261	7.3
5	OH	Monroe	715	4,532	2,809	1,166	230	162	504	5.5
3	WV	Ohio	351	514	3,609	2,779	123	192	135	5.5
3	WV	Brooke	527	1,663	2,500	4,358	439	191	277	5.3
3	WV	Wetzel	260	698	4,323	1,720	45	160	79	5.2
5	OH	Noble	219	144	1,622	1,377	197	87	127	2.5
5	OH	Harrison	191	258	712	786	254	70	116	1.8

SUMMARY OF FACTOR 2: AIR QUALITY WHEELING, WV AREA								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
5	OH	Jefferson	17.8	NA	18.2	NA	18.9	NA
3	WV	Brooke	16.8	NA	16.8	NA	17.4	NA
3	WV	Marshall	15.7	NA	16.0	NA	16.5	NA
3	PA	Washington	15.5	NA	15.7	NA	15.5	NA
5	WV	Ohio	15.2	NA	15.3	NA	15.7	NA
5	OH	Harrison	No Monitor					
5	OH	Belmont	No Monitor					
3	PA	Greene	No Monitor					
3	OH	Monroe	No Monitor					
3	WV	Wetzel	No Monitor					
5	OH	Guernsey	No Monitor					
5	OH	Noble	No Monitor					

**SUMMARY OF FACTOR 3: POPULATION DENSITY AND DEGREE OF
UBANIZATION
WHEELING, WV AREA**

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	PA	Washington	204,110	857	238
5	OH	Jefferson	72,402	410	177
5	OH	Belmont	69,448	537	129
3	WV	Ohio	46,126	106	435
5	OH	Guernsey	40,987	522	79
3	PA	Greene	40,520	576	70
3	WV	Marshall	34,898	307	114
3	WV	Brooke	25,179	89	283
3	WV	Wetzel	17,363	359	48
5	OH	Harrison	15,890	404	39
5	OH	Monroe	14,973	456	33
5	OH	Noble	14,088	399	35

**SUMMARY FACTOR 4: COMMUTING PATTERNS
WHEELING, WV AREA**

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro Counties	
			2002	Percent	Number
3	PA	Washington	2,057	0	386
5	OH	Belmont	1,066	20	5,667
5	OH	Guernsey	1,026	2	365
5	OH	Jefferson	741	7	2,045
3	PA	Greene	560	1	101
3	WV	Ohio	437	15	2,964
5	OH	Noble	362	2	103
3	WV	Brooke	313	9	962
3	WV	Marshall	233	37	5,233
5	OH	Harrison	143	7	473
5	OH	Monroe	142	15	852
3	WV	Wetzel	111	8	519

SUMMARY FACTOR 5: EXPECTED GROWTH WHEELING, WV AREA							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
5	OH	Noble	14,088	2,722	24	229	172
5	OH	Guernsey	40,987	1,768	5	636	163
3	PA	Greene	40,520	1,122	3	161	40
5	OH	Harrison	15,890	-229	-1	3	2
5	OH	Monroe	14,973	-317	-2	2	1
5	OH	Belmont	69,448	-848	-1	290	37
3	WV	Brooke	25,179	-1,545	-6	94	43
3	WV	Wetzel	17,363	-1,565	-8	4	4
3	PA	Washington	204,110	-1,687	-1	168	9
3	WV	Marshall	34,898	-1,837	-5	-57	-20
3	WV	Ohio	46,126	-3,444	-7	-83	-16
5	OH	Jefferson	72,402	-6,404	-8	-48	-6

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

After consideration of all information provided, EPA has determined that the recommendation of June 29, 2004 as described above is still valid. Therefore, EPA is designating Marshall and Ohio counties as the West Virginia portion of the Wheeling nonattainment area.

6.4 Region 4 Nonattainment Areas

6.4.1 EPA 9-Factor Analyses for Alabama for the Designation of PM_{2.5} Nonattainment Areas

6.4.1.1 Birmingham Area MSA

The following is the 9 factor analysis for Birmingham MSA and surrounding Counties. Alabama's submittal in February 2004, recommended Jefferson County be designated nonattainment for the fine particulate matter (PM_{2.5}), based on 2001 - 2003 monitoring data. Based on the following analysis EPA believes that Jefferson, Shelby and Walker Counties should be included in the PM_{2.5} nonattainment area. Jefferson County has a violating monitor and the State recommended it as nonattainment. Shelby County is within the MSA, has high PM, SO_x, NO_x, and VOC emissions, approximately 52 percent of its commuters commute to Jefferson County, has relatively high population and VMT, and has a power plant within the County. Walker County has high SO_x and NO_x emissions from a power plant. We have included in our recommended nonattainment area Walker County that is contiguous to the MSA with a violating monitor, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contributes to the nearby nonattainment problem. We have included this County in our initial recommendations in order to ensure that a sufficient portion of this County, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of Walker County, encompassing the large facility or facilities, should be designated nonattainment. Based on the following analysis, EPA agrees that Blount, St. Clair, Calhoun, Talladega, Tuscaloosa and Morgan Counties should be recommended attainment/unclassifiable for PM_{2.5}. Blount County has no major sources, has relative low emissions and has the lowest population and VMT in the Birmingham area. St. Clair County has relatively low SO_x and PM emissions and has a small population. Calhoun County has no major sources, 84 percent of its commuters commute within its County and it is adjacent to the MSA. Talladega County has a small population, an attaining monitor (14.7 DV), low VMT and it is adjacent to the MSA. Tuscaloosa County has no major sources, 89 percent of its commuters commute within its County, has an attaining monitor (11.6 DV) and it is adjacent to the MSA. Morgan County has an attaining monitor, is part of another MSA, 72 percent of its commuters commute within its County and is several Counties away from Jefferson County.

Area	EPA Recommendation	State Recommendation
Birmingham, AL	Full Counties: Jefferson, Shelby and Walker	Full Counties: Jefferson

The following is a brief summary of the 9 criteria for the Birmingham MSA and surrounding Counties. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC, and NH₃ emissions in tons, and weighted emissions scores for the Birmingham Area and surrounding counties. The MSA counties are in **bold**.

Birmingham MSA and Surrounding Counties Emissions

County	PM	SO2	NOX	VOC	NH3	Weighted Emissions Score	Cumulative Weighted Emissions Score
Jefferson	12,772	56,703	69,364	44,782	1,198	50.3	27.5
Shelby	8,780	126,125	42,095	9,650	386	40.9	91.2
St Clair	976	1,087	7,159	4,673	1,395	4.8	96.0
Blount	937	454	3,054	2,781	4,049	3.9	99.9
Walker	3,916	59,256	23,982	4,750	1,491	19.2	
Tuscaloosa	2,065	5,183	11,252	14,752	915	12.8	
Morgan	2,386	10,949	12,012	17,639	2,183	11.0	
Etowah	2,193	11,850	8,487	7,089	1,842	9.9	
Calhoun	2,000	2,271	7,115	9,452	1,098	9.5	
Talladega	1,968	12,270	8,593	6,065	769	9.1	
Dallas	1,505	3,296	4,124	3,670	411	6.2	
Cullman	1,459	1,004	5,433	6,612	8,408	6.0	
Marshall	1,294	1,525	4,749	7,283	4,275	5.5	
Autauga	1,069	2,569	4,897	3,099	249	5.3	
Lawrence	1,429	2,422	5,981	2,946	1,649	5.3	
Elmore	1,014	517	4,443	4,368	326	4.8	
Chilton	777	486	3,621	3,260	300	4.3	
Bibb	613	189	1,260	1,433	169	3.8	
Winston	574	320	1,547	3,311	1,336	3.4	
Marion	567	450	2,835	3,151	742	3.1	
Fayette	456	306	1,246	1,509	346	2.8	
Coosa	408	152	791	1,410	102	2.4	
Hale	430	156	2,373	1,462	215	2.3	
Perry	415	218	589	799	166	2.3	

Based on the analysis for this factor, there appears to be emissions in Shelby and Walker, Counties that contribute to the air quality in Jefferson County, resulting in a violating monitor there.

Factor 2: Air quality in potentially included versus excluded areas

Birmingham MSA and Surrounding Counties Design Value (DV)

County	2001-2003 DV
Jefferson	18.0
Shelby	14.4
Walker	12.8
Tuscaloosa	11.6
**Morgan	17.6
Etowah	14.8
Talladega	14.7

Jefferson County has 6 monitors, only one monitor exceeded the PM_{2.5} standard (North Birmingham/Wylam). Shelby, Walker, Tuscaloosa, Etowah, and Talladega counties all have monitors that show attainment of the PM_{2.5} standard.

** Morgan County has a violating monitor, however, the Decatur, Alabama, fine particulate matter (PM_{2.5}) monitoring site (AQS #01-103-0010) began operating in January 1999, and was terminated in August 2001. A new site (AQS # 01-103-0011) was selected in the Decatur area and monitoring began in August 2001. The State of Alabama requested and received Region 4 concurrence for these network design changes. The changes were approved due to a local diesel source impacting the initial monitoring site. The data from the initial monitoring site was left in the Air Quality System (AQS) database and is in the current calculations for the Decatur area. Data sets from each of the sites are incomplete when considered individually. When the data sets are combined the calculations demonstrate the Decatur area to be below the level of the PM_{2.5} NAAQS.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Birmingham MSA and adjacent Counties.

Birmingham MSA and Surrounding Counties Population & Area

County	Population 2002	Percent in MSA	Population Density 2002
Jefferson	661,153	71	594
Shelby	153,832	16	193
St Clair	67,215	7	106
Blount	59,968	6	82
Walker	70,655		89
Tuscaloosa	166,512		126
Morgan	111,725		192
Etowah	103,105		193
Calhoun	111,616		183
Talladega	80,638		109

Of the MSA population, 87 percent resides in Jefferson County (661,153) and Shelby County (153,832). Blount and St. Clair Counties have a much lower population and population density than Jefferson and Shelby Counties.

Factor 4: Traffic and commuting patterns

Commuting Information - Following is an analysis of the commuting in the Birmingham MSA and adjacent Counties.

Jefferson County, an MSA county, has a total of 288,136 commuters.

- Commuters who remain in Jefferson County 265,661 (92%)

Shelby County, an MSA county, has a total of 70,873 commuters.

- Commuters from Shelby County to Jefferson County 37,119 (52%)
- Commuters who remain in Shelby County: 32,573 (46%)

St. Clair County has a total of 27,773 commuters.

- Commuters from St. Clair County to Jefferson County 12,870 (46%)
- Commuters who remain in St. Clair County: 10,648 (38%)

Blount County has a total of 22,255 commuters.

- Commuters from Blount County to Jefferson County 9,669 (43%)
- Commuters who remain in Blount County: 8,966 (40%)

Walker County has a total of 27,448 commuters.

- Commuters from Walker County to Jefferson County 6,746 (25%)
- Commuters who remain in Walker County: 17,293 (63%)

Tuscaloosa County has a total of 73,292 commuters.

- Commuters from Tuscaloosa County to Jefferson County 4,385 (6%)
- Commuters who remain in Tuscaloosa County: 65,331 (89%)

Morgan County has a total of 49,769 commuters.

- Commuters who remain in Morgan County: 36,005 (72%)

Etowah County has a total of 42,636 commuters.

- Commuters from Etowah County to Jefferson County 1,658 (4%)
- Commuters who remain in Etowah County: 32,181 (75%)

Calhoun County has a total of 47,181 commuters.

- Commuters from Calhoun County to Jefferson County 842 (2%)
- Commuters who remain in Calhoun County: 39,856 (84%)

Talladega County has a total of 31,443 commuters.

- Commuters from Talladega County to Jefferson County 2,292 (7%)
- Commuters who remain in Talladega County: 20,563 (65%)

The following Counties have significant commuters commuting to Jefferson County on a percentage basis: Shelby (52%), Walker (25%), St. Clair (46%) and Blount County (43%). Although a relatively high percentage of commuters in Blount and St. Clair Counties go to Jefferson County, they only contribute 3% and 4% respectively.

Birmingham MSA and Surrounding Counties VMT

County	VMT 2002	VMT Growth 02-10
Jefferson	8,242	3,485
Shelby	1,449	345
St. Clair	1,111	-331
Blount	594	134
Walker	851	212
Tuscaloosa	2,430	176
Morgan	1,296	816
Etowah	1,235	500
Calhoun	1,525	431
Talladega	801	39

Jefferson County has over 70% of the VMT in the MSA

Factor 5: Expected growth.

The following table has the population and population growth figures for the Birmingham MSA and Surrounding Counties.

Birmingham MSA and Surrounding Counties Population/Growth

County	Population	Growth 90-00	Percent Growth
Jefferson	661,153	10,522	2
Shelby	153,832	43,935	44
St. Clair	67,215	14,733	29
Blount	59,968	11,776	30
Walker	70,655	3,043	4
Tuscaloosa	166,512	14,353	10
Morgan	111,725	11,021	11
Etowah	103,105	3,619	4
Calhoun	111,616	-3,785	-3
Talladega	80,638	6,214	8

Blount County had one of the higher population growth (30 percent) in the MSA, however, its population (59,968) is small compared to that of the entire CMSA (942,168) or to either Jefferson County (661,153) and Shelby County (153,832). St. Clair County had a fairly high population growth (29 percent), its population (67,215) is small compared to that of the entire CMSA (942,168) and is only one-tenth the population of Jefferson County (661,153) and less than half the population of Shelby County (153,832). Shelby County had a high population growth (44 percent).

Factor 6: Meteorology

Not a significant factor in the analyses.

Factor 7: Geography/topography

Not a significant factor in the analyses.

Factor 8: Jurisdictional boundaries

The Birmingham 8-hour ozone nonattainment area consist of Jefferson and Shelby Counties.

Factor 9: Level of control of emission sources

Reasonable Available Control Technology for VOC has been in place since 1979

Stage 1 Vapor Recovery has been in place since 1990

1-Hour Attainment Demonstration required further NO_x reductions from electric generating plants Gorgas and Miller, totaling 68.2 tons per day of NO_x reductions (seasonal).

Tier II National Fuel Standard (starting 2004)

NOx SIP Call requires large reductions in NOx emissions from major utilities, large industrial boilers, gas turbines and cement kilns (seasonal). As a result Gaston, Gorgas and Miller power plants have/will install the following controls:

Miller Units 1 & 2 Selective Catalytic Reduction (SCR)
Gaston Units 1 - 4 overfire air
Gaston Unit 5 advanced low NOx burners

The following controls are being or have been placed on Gorgas and Miller power plants to meet the requirements of the Birmingham attainment SIP:

Gorgas Unit 10 SCR
Gorgas Units 6, 7, and 8 low NOx burners
Miller Units 3&4 SCR

There is only one significant NOX source in St. Clair County, a cement kiln (National Cement Co. 1,851 tpy), which is implementing significant controls which have been determined to be reasonable and highly cost effective to meet the Alabama's NOX SIP requirements.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Walker County, AL:

In the June 29, 2004, letters from EPA to the States responding to their designation recommendations, EPA recommended the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant in the nonattainment area. Walker County, AL is one of those counties. Walker County has low population (70,655 compared to 661,153 in Jefferson County where the city of Birmingham is located), low population density (89 people per square mile compared to 594 in Jefferson County), low VMT (851,000 compared to 8,242,000 in Jefferson County), and the only large point source is the Gorgas Steam Plant.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small "free-standing" boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped "land connector" extending from the main part of the nonattainment area to the power plant. The State of Alabama subsequently submitted two partial county recommendations, one included the Gorgas Steam Plant boundary as a noncontiguous area and the other was contiguous to the Birmingham area.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifiers (StateFIPs-CoFIPs-Tract#-Block Group#) 01-127-214-5, 01-127-0215-4, and 01-127-0216-2 portion of Walker County as part of the Birmingham nonattainment area.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Birmingham, AL area: Jefferson, Shelby, and Walker (Partial).

6.4.1.2 Columbus Area MSA

The following is the 9 factor analysis for Columbus MSA and surrounding Counties. Alabama's submittal in February 2004, recommended that Russell County be designated nonattainment for the fine particulate matter (PM_{2.5}), based on 2001 - 2003 monitoring data. Georgia's submittal in June 2004, recommended that Harris, Muscogee and Chattahoochee Counties be designated attainment for PM_{2.5}. Based on the following analysis EPA recommends that Lee and Russell counties in Alabama, and Harris, and Muscogee Counties in Georgia, should be included in the PM_{2.5} nonattainment area. Lee County is adjacent to the MSA, has high VMT and a large population. Russell County has a violating monitor and the State recommended it as nonattainment. Harris County has relatively high NO_x and VOC emissions and relatively high VMT. Muscogee County has high NO_x and VOC emissions, high VMT and a large population. Based on the following analysis, EPA agrees with the recommendation that Barbour, Chambers, Montgomery, Elmore and Tallapoosa Counties in Alabama, and Chattahoochee, Troup, Stewart, Meriwether, Sumter Counties in Georgia, should be attainment/unclassifiable for PM_{2.5} based on low emissions, low VMT and low population.

Area	EPA Recommendation	State Recommendation
Columbus, GA	Lee and Russell Counties in Alabama and Harris and Muscogee Counties in Georgia	Russell County, Alabama

The following is a brief summary of the 9 criteria for the Columbus MSA and surrounding Counties . These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC, and NH₃ emissions in tons, and weighted emissions scores for the Columbus Area and surrounding counties. The MSA counties are in **bold**.

Columbus MSA and Surrounding Counties Emissions

County	PM	SO ₂	NO _x	VOC	NH ₃	Weighted Emissions Score	Cumulative Weighted Emissions Score
Russell, AL	1,344	2,550	5,718	4,434	179	35.1	35.1
Harris, GA	590	104	2,856	1,748	128	26.8	61.9
Muscogee, GA	513	803	5,965	9,476	323	25.4	87.3
Chattahoochee, GA	208	43	387	482	15	12.7	100
Troup, GA	1,194	422	12,277	8,223	382	48.7	
Montgomery, AL	1,421	6,292	10,454	14,966	973	43.3	
Lee, AL	1,043	1,425	5,125	7,474	333	42.8	
Barbour, AL	874	419	2,208	2,529	497	41.6	
Sumter, GA	2,578	1,725	1,726	2,262	847	40.5	
Meriwether, GA	844	190	1,866	3,006	167	33.7	
Elmore, AL	1,014	517	4,443	4,368	326	30.8	
Tallapoosa, AL	679	655	1,993	3,230	263	26.5	
Chambers, AL	579	527	2,350	2,882	124	23.9	
Stewart, GA	429	32	360	464	189	23.3	
Taylor, GA	398	76	966	622	833	18.3	
Macon, AL	412	223	2,242	1,871	133	17.1	
Talbot, GA	288	70	903	520	74	15.9	
Marion, GA	314	32	328	517	470	15.4	
Bullock, AL	273	93	407	570	214	12.7	
Webster, GA	303	128	358	201	114	12.6	
Schley, GA	192	14	195	290	163	8.4	

Based on the analysis for this factor, there appear to be emissions in Lee County, Alabama, that contribute to the violation in Russell County.

Factor 2: Air quality in potentially included versus excluded areas.

Columbus MSA and Surrounding Counties Design Value (DV)

County	2001-2003 DV
Russell, AL	15.3
Muscogee, GA	14.7
Montgomery, AL	14.2

Muscogee and Montgomery Counties have monitors that show attainment of the PM2.5 standard while Russell County is violating the standard.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the Counties in the Columbus MSA and adjacent Counties.

Columbus MSA and Surrounding Counties Population & Area

County	Population2002	Percent in MSA	Population Density 2002
Russell, AL	49,415	18	77
Harris, GA	25,092	9	54
Muscogee, GA	185,948	67	861
Chattahoochee, GA	15,440	6	62
Troup, GA	59,767		144
Montgomery, AL	223,346		283
Lee, AL	118,123		194
Barbour, AL	28,826		33
Sumter, GA	33,247		69
Meriwether, GA	22,623		45
Elmore, AL	68,771		111
Tallapoosa, AL	40,946		57
Chambers, AL	36,251		61
Stewart, GA	5,040		11

Lee County is adjacent to Russell County and its population (118,123) is about two and half times that of Russell County (49,415).

Factor 4: Traffic and commuting patterns

Commuting Information - Following is an analysis of the commuting in the Columbus MSA and adjacent Counties.

Russell County, AL has a total of 19,859 commuters.

- Commuters who remain in Russell County 7,051 (36%)

Harris County, GA has a total of 11,811 commuters.

- Commuters from Lee County to Russell County 214 (2%)
- Commuters who remain in Harris County 2,867 (24%)

Muscogee County, GA has a total of 82,977 commuters.

- Commuters from Muscogee County to Russell County 2,479 (3%)
- Commuters who remain in Muscogee County 71,862 (87%)

Chattahoochee County, GA has a total of 8,538 commuters.

- Commuters who remain in Chattahoochee County 5,482 (64%)

Troup County, GA has a total of 26,339 commuters.

- Commuters who remain in Troup County 22,074 (84%)

Montgomery County, AL has a total of 96,943 commuters.

- Commuters who remain in Montgomery County 90,943 (94%)

Lee County, AL has a total of 52,119 commuters.

- Commuters who remain in Lee County 35,549 (68%)
- Commuters from Lee County to Russell County 2,682 (5%)

Barbour County, AL has a total of 10,023 commuters.

- Commuters who remain in Barbour County: 8,370 (84%)
- Commuters from Lee County to Russell County 335 (3%)

Sumter County, GA has a total of 13,963 commuters.

- Commuters who remain in Sumter County 11,652 (83%)

Meriwether County, GA has a total of 8,893 commuters.

- Commuters who remain in Meriwether County 4,114 (46%)

Elmore County, AL has a total of 28,143 commuters.

- Commuters who remain in Elmore County 9,415 (33%)

Tallapoosa County, AL has a total of 17,009 commuters.

- Commuters who remain in Tallapoosa County 12,125 (71%)

Chambers County, AL has a total of 15,480 commuters.

- Commuters who remain in Chambers County 9,281 (60%)

Stewart County, GA has a total of 1, 892 commuters.

- Commuters who remain in Stewart County 965 (51%)

There are no Counties that have significant commuters commuting to Russell County.

Columbus MSA and Surrounding Counties VMT

County	VMT 2002	VMT Growth 02-10
Russell, AL	671	276
Harris, GA	547	-207
Muscogee, GA	1,594	534
Chattahoochee, GA	56	160
Troup, GA	1,454	-839
Montgomery, AL	2,565	642
Lee, AL	1,119	457
Barbour, AL	431	-129
Sumter, GA	405	-62
Meriwether, GA	271	138

Elmore, AL	615	168
Tallapoosa, AL	502	-56
Chambers, AL	378	-44
Stewart, GA	75	47

Over 50% of the VMT in the MSA is in Muscogee County, Georgia. As noted above, none of the adjacent Counties have appreciable commuting into the MSA.

Factor 5: Expected growth

The following table has the population and population growth figures for the Columbus MSA and surrounding Counties.

Columbus MSA and Surrounding Counties Population/Growth

County	Population 2002	Growth 90-00	Percent Growth
Russell, AL	49,415	2,896	6
Harris, GA	25,092	5,907	33
Muscogee, GA	185,948	7,013	4
Chattahoochee, GA	15,440	-2,052	-12
Troup, GA	59,767	3,243	6
Montgomery, AL	223,346	14,425	7
Lee, AL	118,123	27,946	32
Barbour, AL	28,826	3,621	14
Sumter, GA	33,247	2,972	10
Meriwether, GA	22,623	123	1
Elmore, AL	68,771	16,664	34
Tallapoosa, AL	40,946	2,649	7
Chambers, AL	36,251	-293	-1
Stewart, GA	5,040	-402	-7

Harris County, Georgia has large growth on a percentage basis.

Factor 6: Meteorology

A wind analysis using wind data from the Columbus, Georgia Airport was completed to evaluate the predominant wind direction(s) in Phenix City over the 3-year period on all days. There is a large easterly component to the winds during the 3-year time period., but there is not sufficient information to use meteorology as a deciding factor for an annual average..

Factor 7: Geography/topography

Not a significant factor in the analyses.

Factor 8: Jurisdictional boundaries

Not a significant factor in the analyses.

Factor 9: Level of control of emission sources

Reasonable Available Control Technology for VOC has been in place since 1979

Stage 1 Vapor Recovery has been in place since 1990

NOx SIP Call requires large reductions in NOx emissions from major utilities, large industrial boilers, gas turbines and cement kilns (seasonal for Macon, Tallapoosa, Chambers, Elmore and Lee Counties).

Tier II National Fuel Standard (starting 2004)

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included the Lee County, Alabama, and Harris County, Georgia, as part of the Columbus, GA nonattainment area. Upon further review of additional information provided by the states, EPA is revising its recommendation and is designating Lee County, AL and Harris County, GA as attainment/unclassifiable.

Lee County, AL:

Lee County, Alabama, is being designated attainment/unclassifiable because it has no major point sources of precursor emissions with 40% (7,474 tons) of its total VOC and 87% (5,125 tons) of its total NOx emissions coming from mobile sources. Lee County is adjacent to the MSA. The majority of the commuting population remains inside Lee County, with only 5 percent commuting to Russell County where the violating monitor is located.

We considered the data in the request for spatial averaging for the Columbus area, which was denied, while evaluating the other factors and determined that Lee County is not contributing to the violations.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Columbus, GA-AL area: Russell.

6.4.1.3 Chattanooga Area

The Chattanooga MSA contains the following Tennessee counties: Marion and Hamilton; and the following Georgia Counties: Dade, Walker, and Catoosa. Based on air quality data for 2001-2003, the monitor with the highest design value in Hamilton County has a design value of 16.1 and the monitor in Walker County has a design value of 15.6. No other counties in the MSA contain ambient air monitors. The State of Tennessee recommended as nonattainment the county of Hamilton and the State of Georgia recommended as nonattainment the county of Walker. The States have recommended that all other counties be designated attainment. The State of Tennessee submitted some justification for this recommendation, however, they indicated that the detailed emission information would be provided at a later date. EPA is modifying the State

of Tennessee's recommendation and will review the additional information during the 120 day period following the notification letter.

EPA has received some information from the State of Tennessee that Marion (MSA) County should be designated attainment for the PM2.5 standard and no justification from the State of Georgia indicating that any other counties should be included or excluded from the Chattanooga PM2.5 nonattainment area. Adjacent counties with significant emissions include McMinn and Roane Counties which are attached to the Knoxville nonattainment area and Floyd County which is a separate nonattainment area.

Additionally we have included in our recommended nonattainment area Jackson County, AL, that is adjacent to the Chattanooga MSA, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility or facilities, should be designated nonattainment. Therefore EPA is modifying the States' recommendations to include all of the counties in the MSA and the adjacent county of Jackson, Alabama.

Area	EPA Recommendation	State Recommendation
Chattanooga TN-GA	Full counties: Marion, Hamilton, TN; Dade, Walker, Catoosa, GA; Jackson, AL	Full counties: Hamilton and Walker Drop: Marion

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table contains the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted emissions scores for the counties in the Chattanooga MSA and some adjacent counties. (MSA counties are in bold.)

County	PM	SO _x	NO _x	VOC	Amm	Weighted Emissions Score	Cumulative Weighted Emissions Score
Hamilton	1,498	5,300	20,048	27,150	1,022	49.5	49.5
Walker	856	632	2,798	4,516	958	17.9	67.4
Marion	679	477	3,156	2,640	501	14.1	81.5
Catoosa	617	167	3,085	3,601	680	11.9	93.4
Dade	302	107	2,415	1,574	285	6.5	99.9
Roane	4967	92331	30865	4300	285	296.9	
Jackson, AL	4389	44333	31502	4742	1494	176.1	
Floyd, GA	10057	31821	22736	7139	976	154.0	
McMinn	3348	10216	10829	5546	1268	73.3	
Whitfield, GA	2732	1747	7283	7386	991	54.2	
Rhea	1405	302	2625	3643	149	31.2	
Loudon	804	4035	5899	5338	360	24.3	
DeKalb, AL	1193	741	4776	5867	5765	21.3	
Bradley	1233	419	4230	7551	1916	21.1	
Warren	1164	1189	1869	3675	446	20.7	
Monroe	743	154	2387	3420	554	16.4	
Gordon, GA	872	200	3645	4019	2630	15.8	
Fannin, GA	614	65	887	1266	283	14.2	
Franklin	644	482	2100	2929	1512	13.4	
Chattooga, GA	450	1228	1834	1634	197	11.7	
Murray, GA	576	130	2067	1700	910	11.4	
Polk	295	2066	900	949	553	11.3	
Cherokee, NC	428	143	921	1753	111	10.6	
Grundy	202	164	1000	1150	1170	4.8	
Bledsoe	203	31	475	528	335	4.5	
Meigs	198	112	885	871	118	4.3	
Sequatchie	140	22	304	591	173	3.4	
Van Buren	118	178	291	320	74	3.3	

Based on the analysis for this factor there appears to be emissions in all MSA counties and the adjacent county of Jackson, AL, which show a potential to contribute. Other adjacent counties with large emissions (McMinn and Roane, TN and Floyd, GA) are included in other nonattainment areas.

Factor 2: Air quality in potentially included versus excluded areas

The following table contains the 2001-2003 PM_{2.5} Design Values for all Chattanooga MSA Counties and adjacent counties. (MSA counties are in bold.)

County	2001-2003 design value
Hamilton	16.1
Walker	15.6
Roane	14.2
Floyd, GA	15.7
McMinn	14.6
Loudon	15.4 *
DeKalb, AL	14.7

* Incomplete data that is not sufficient to determine attainment/nonattainment. Data substitution does not apply.

Based on this factor, Hamilton County, TN and Walker and Floyd Counties in GA are violating the PM_{2.5} standard. Catoosa County, GA is located between violating monitors in Hamilton and Walker Counties.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table contains the populations for the counties in the Chattanooga MSA and some adjacent counties.

Urban population figures were not available. (MSA counties are in bold.)

County	2002 Population	Percent of MSA Population (2002)	2002 Population Density (people/sq.mile)
Hamilton	309,321	65.7	570
Walker	61,949	13.2	139
Marion	27,654	5.9	55
Catoosa	56,341	12.0	348
Dade	15,615	3.3	90
Roane	52,316		145
Jackson, AL	54,035		50
Floyd, GA	92,606		181
McMinn	50,051		116
Whitfield, GA	87,037		300

Based on the analysis for this factor, there appears to be population sufficient to indicate a contribution by the following MSA counties: Hamilton, Walker, and Catoosa. The five adjacent counties also have population with a potential to contribute.

Factor 4: Traffic and commuting patterns

Commuting Information

Hamilton has a working population of 146, 824

–Commuters who remain in Hamilton: 133,644 (91%)

Marion has a working population 11766.

–Commuters who remain in Marion: 5596 (48%)

–Commuters from Marion to Hamilton: 4271

Dade has a working population of 6983.

–Commuters who remain in Dade: 2363

–Commuters from Dade to Hamilton:3091 (44%)

–Commuters from Dade to Walker: 747

Catoosa has a working population of 26710.

–Commuters who remain in Catoosa: 7167

–Commuters from Catoosa to Hamilton: 12320 (46%)

–Commuters from Catoosa to Walker:1937

Walker has a working population of 27223.

–Commuters who remain in Walker: 11244 (41%)

–Commuters from Walker to Hamilton: 9098

Whitfield, GA has a working population of 38,909

–Commuters who remain in Whitfield: 33,796 (87%)

–Remaining commuters do not commute to the Chattanooga MSA

DeKalb, AL has a working population of 7798

–Commuters who remain in DeKalb: 5179 (66%)

–Remaining commuters do not commute to the Chattanooga MSA

The following table contains the vehicle miles traveled (thousand miles) for the counties in the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 VMT (thousand miles/year)
Hamilton	3,743
Walker	742
Marion	654
Catoosa	810
Dade	512
Roane	784
Jackson, AL	786
Floyd, GA	948
McMinn	787
Whitfield, GA	1423

Based on the analysis for this factor the VMT for all MSA counties indicate a potential to contribute. Although Whitfield County has a relatively high VMT, none of the commuters go to the Chattanooga MSA.

Factor 5: Expected growth

The following table has the population and population growth figures for the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 Population	Growth (90-00)	% Growth (90-00)
Hamilton	309,321	22360	8
Walker	61,949	2713	5
Marion	27,654	2916	12
Catoosa	56,341	10818	25
Dade	15,615	2007	15
Roane	52,316	4683	10
Jackson, AL	54,035	6130	13
Floyd, GA	92,606	9314	11
McMinn	50,051	6632	16
Whitfield, GA	87,037	11063	15

Based on the analysis for this factor, there appears to be significant growth on a percentage basis in Catoosa County that indicates a contribution to the air quality in the Chattanooga MSA.

Factor 6: Meteorology

This factor did not play a significant role in the decision making process.

Factor 7: Geography/topography

The Chattanooga area does not have any geographical or topographical boundaries limiting its airshed.

Factor 8: Jurisdictional boundaries

Hamilton and Meigs Counties, TN and Catoosa County, GA were designated nonattainment for the 8-hour ozone standard on April 15, 2004.

This factor did not play a significant role in the decision making process.

Factor 9: Level of control of emission sources

Sources in the Chattanooga area are subject to Prevention of Significant Deterioration (PSD) requirements, Control Technology Guidelines Reasonable Available Control Technology (CTG RACT) - (Hamilton County only}, Maximum Achievable Control Technology (MACT) for Hazardous Air Pollutants (HAP), New Source Performance Standards (NSPS), and the NOx SIP call.

This factor did not play a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Jackson County, AL:

In the June 29, 2004, letters from EPA to the States responding to their designation recommendations, EPA recommended the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant in the nonattainment area. Jackson County, AL is one of those counties. Jackson County has 4,389 tons of PM, 4,333 tons of SO₂ and 31,502 of NO_x emissions, with the majority of emissions coming from the Widows Creek Power Plant. The commuting patterns show that 68% (16,642) of the working population in the county actually works in Jackson County with 8% (1,853) working in Madison County and another 8% (1,695) working in Dekalb County. The available data indicate that there are no identifiable commuting patterns between Jackson County and Chattanooga.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant. The State of Alabama subsequently submitted two partial county recommendations, one included the Widows Creek Plant boundary as a contiguous area and the other was contiguous to the nearest county recommended as nonattainment.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifier (StateFIPs-CoFIPs-Tract#-Block Group#) 01-071-9503-1 portion of Jackson County as part of the Chattanooga nonattainment area.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Chattanooga, TN-GA area: Jackson (Partial).

6.4.1.4 DeKalb and Etowah Counties

Based on incomplete monitoring data and data substitution not being a viable alternative, it is EPA's position that DeKalb and Etowah Counties be designated as unclassifiable. These two counties had monitoring data for 2000-2002 that was violating and have incomplete data for 2001-2003. Applying the data substitution policy will not confirm attainment. There is no distinction, regulatorily between attainment and unclassifiable.

Area	EPA Recommendation	State Recommendation
De Kalb County Etowah County	De Kalb County Etowah County	

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as unclassifiable for the Dekalb County, AL area: Dekalb.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as unclassifiable for the Gadsden, AL area: Etowah.

6.4.2 EPA 9-Factor Analyses for Georgia for the Designation of PM_{2.5} Nonattainment Areas

6.4.2.1 Atlanta Area MSA

The Atlanta MSA contains the counties of: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Pickens, Rockdale, Spalding, and Walton.

On February 13, 2004, the State of Georgia submitted to EPA their PM 2.5 nonattainment recommendations. Georgia recommended only counties which contained a monitored violation and provided no further justification at that time. On June 17, 2004, the State submitted additional information and revised recommendations. The revision recommended the 20 county ozone nonattainment area, which includes the adjacent county of Hall, plus a partial county recommendation for Heard County adjacent to the Atlanta MSA which contains no monitor, but a power plant with large SO₂ and NO_x emissions. The State also recommended that Floyd County which is adjacent to the Atlanta MSA and has a violating monitor be designated as a separate nonattainment area. The adjacent counties of Hall, Jasper and Putnam have significant emissions with a potential to contribute to the violations in the Atlanta area. Putnam county contains a power plant with large SO₂ and NO_x emissions. We have included in our recommended nonattainment area Putnam County in your state that is contiguous to this CMSA with a violating monitor, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contributes to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of such contiguous county, encompassing the large facility or facilities, should be designated nonattainment. Based on emission levels and the other nine factors, EPA is modifying the Georgia submittal to include Jasper and Putnam counties. EPA agrees with the partial county recommendation for Heard County, and Floyd County as a separate nonattainment area.

Area	EPA Recommendation	State Recommendation
Atlanta, GA	<p>Full counties: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, Spalding, and Walton</p> <p>Adjacent: Floyd as a separate area; Hall, Heard as a partial, Jasper, Putnam</p>	<p>Full counties: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, Spalding, and Walton</p> <p>Adjacent: Floyd as a separate area; Hall, Heard as a partial</p>

The following is a brief summary of the 9 criteria for the Atlanta MSA and surrounding counties. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted scores for the counties in the Atlanta MSA and some adjacent counties. (MSA counties are in **bold**.)

County	PM	SOx	NOx	VOC	Amm	Weighted score	Cumulative Weighted score
Fulton	16,041	11,819	48,166	44,184	1,948	18.7	18.7
Bartow	9,181	154,447	43,326	5,725	1,309	12.5	31.2
Cobb	3,767	26,411	27,948	27,219	969	9.6	40.8
Coweta	3,795	44,839	15,822	5,048	241	9.4	50.2
De Kalb	3,557	1,734	27,204	36,184	1,175	8.6	58.8
Cherokee	3,761	400	6,769	7,334	1,450	7.4	66.2
Clayton	2,727	612	9,808	10,776	437	6.1	72.3
Gwinnett	2,514	1,446	23,075	27,071	992	5.7	78.0
Henry	2,090	392	14,577	6,349	269	3.6	81.6
Forsyth	1,917	288	5,267	5,763	1,990	2.7	84.3
Carroll	1,629	293	5,536	7,224	2,808	2.6	86.9
Paulding	1,415	236	4,393	3,593	449	2.5	89.4
Douglas	822	239	4,565	4,342	163	1.8	91.2
Newton	1,147	226	4,109	5,047	240	1.8	93.0
Fayette	1,122	252	4,531	4,499	173	1.6	94.6
Walton	919	176	2,759	3,952	755	1.4	96.0
Spalding	795	180	3,251	3,839	212	1.1	97.1
Barrow	706	128	2,340	2,738	1,632	1.0	98.1
Rockdale	774	222	3,678	3,820	166	1.0	99.1
Pickens	463	83	1,116	1,769	1,204	0.9	100.0
Jasper	2,835	210	28,144	2,453	360	6.3	
Putnam	3,726	65,560	34,202	1,175	399	6.3	
<i>Floyd</i>	<i>10,057</i>	<i>31,821</i>	<i>22,736</i>	<i>7,139</i>	<i>976</i>	<i>6.1</i>	
Monroe	3,403	75,571	34,069	2,189	644	6.1	
Heard	4,090	75,745	21,714	1,170	634	5.6	
Hall	2,347	1,045	7,714	11,062	3,709	3.0	
Troup	1,194	422	12,277	8,223	382	2.5	
Lee	1,043	1,425	5,125	7,474	333	2.2	
Meriwether	844	190	1,866	3,006	167	1.6	
Gilmer	646	69	1,148	1,273	2,663	1.5	
Walker	856	632	2,798	4,516	958	1.5	
Tallapoosa	679	655	1,993	3,230	263	1.3	
Gordon	872	200	3,645	4,019	2,630	1.3	
Harris	590	104	2,856	1,748	128	1.3	
Jackson	817	151	3,639	2,935	3,584	1.3	
Chambers	579	527	2,350	2,882	124	1.2	
Habersham	651	103	1,757	2,201	3,031	1.1	
Polk	660	142	2,345	3,485	575	1.1	
Jones	455	105	1,537	1,506	230	1.0	
Cherokee	633	222	1,184	2,036	778	0.9	
Randolph	404	223	9,276	1,891	1,294	0.9	
Lumpkin	403	60	905	1,067	1,090	0.9	
Taylor	398	76	966	622	833	0.9	
Upson	476	84	1,568	1,926	286	0.9	
White	449	58	1,000	1,190	1,462	0.9	
Cleburne	331	130	2,057	1,091	1,227	0.8	
Chattooga	450	1,228	1,834	1,634	197	0.8	
Clarke	395	215	3,362	5,223	390	0.8	
Haralson	410	96	1,768	3,071	371	0.8	

Morgan	390	121	2,422	3,176	1,129	0.8	
Talbot	288	70	903	520	74	0.8	
Butts	357	112	1,609	1,438	88	0.7	
Crawford	346	38	645	570	242	0.7	
Dawson	324	58	915	1,246	1,142	0.7	
Oconee	507	111	1,599	2,047	1,050	0.7	
Banks	325	65	1,178	1,127	3,407	0.6	
Pike	314	42	607	823	148	0.5	
Lamar	257	59	812	1,090	491	0.4	

Based on the emissions analysis the adjacent counties of Floyd, Hall, Heard, Jasper, and Putnam have significant emissions indicating potential contribution to the violations in the area. The Agency agrees that Floyd can be designated as a separate PM2.5 nonattainment area and with the partial county recommendation for Heard. The Agency also agrees with the State that Pickens is not contributing based on the low emissions levels. It was not included in the ozone nonattainment area based on noncontribution.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Fulton	18.0
Cobb	16.1
De Kalb	16.1
Clayton	16.1
Gwinnett	15.6
Paulding	14.1
Floyd	15.7
Hall	14.9
Walker	15.6
Clarke	15.6

There are five counties containing violating monitors in the area recommended by the State and one violating in the adjacent county of Floyd recommended as a separate nonattainment area. Hall County contains an attaining monitor but was recommended by the State as contributing.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Atlanta MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	Percent Population of MSA	Population Density
Fulton	825,431	18.8	1,560
Bartow	82,607	1.9	180
Cobb	651,485	14.9	1,916
Coweta	97,771	2.2	221
De Kalb	676,996	15.4	2,526
Cherokee	159,295	3.6	376

Clayton	252,733	5.8	1,767
Gwinnett	650,771	14.8	1,503
Henry	139,699	3.2	433
Forsyth	116,924	2.7	517
Carroll	94,907	2.2	190
Paulding	94,184	2.1	300
Douglas	98,650	2.2	496
Newton	71,594	1.6	259
Fayette	96,611	2.2	490
Walton	67,069	1.5	204
Spalding	59,410	1.4	300
Barrow	51,016	1.2	315
Rockdale	73,558	1.7	562
Pickens	25,619	0.6	110
Jasper	12,283		33
Putnam	19,390		56
<i>Floyd</i>	<i>92,606</i>		<i>181</i>
Monroe	22,675		57
Heard	11,340		38
Hall	152,235		386

Pickens County has the lowest population of any of the MSA counties supporting the noncontributing determination. Although, Heard, Jasper and Putnam counties have small population, they contain sources with large emissions.

Factor 4: Traffic and commuting patterns

Commuting Information:

Fulton County has a total of 385,442 commuters.

- Commuters that remain in Fulton County: 265,870
- Commuters from Fulton County to Cobb County: 24,991
- Commuters from Fulton County to Dekalb County: 41,232
- Commuters from Fulton County to Clayton County: 9,722
- Commuters from Fulton County to Gwinnett County: 21,211

Bartow County has a total of 35,953 commuters.

- Commuters that remain in Bartow County: 20,692
- Commuters from Bartow County to Fulton County: 1,882
- Commuters from Bartow County to Cobb County: 6,936
- Commuters from Bartow County to Dekalb County: 678
- Commuters from Bartow County to Gwinnett County: 392
- Commuters from Bartow County to Floyd County: 986

Cobb County has a total of 325,412 commuters.

- Commuters that remain in Cobb County: 179,750
- Commuters from Cobb County to Fulton County: 92,014
- Commuters from Cobb County to Dekalb County: 18,098
- Commuters from Cobb County to Gwinnett County: 8,723

Coweta County has a total of 43,506 commuters.

- Commuters that remain in Coweta County: 20,735
- Commuters from Coweta County to Fulton County: 8,855
- Commuters from Coweta County to Cobb County: 1,136
- Commuters from Coweta County to Dekalb County: 1,014
- Commuters from Coweta County to Clayton County: 3,097

Dekalb County has a total of 341,110 commuters.

- Commuters that remain in Dekalb County: 149,919
- Commuters from Dekalb County to Fulton County: 121,921
- Commuters from Dekalb County to Cobb County: 13,448
- Commuters from Dekalb County to Clayton County: 5,644
- Commuters from Dekalb County to Gwinnett County: 34,747

Cherokee County has a total of 74,075 commuters.

- Commuters that remain in Cherokee County: 26,239
- Commuters from Cherokee County to Fulton County: 17,494
- Commuters from Cherokee County to Cobb County: 18,911
- Commuters from Cherokee County to Dekalb County: 2,898
- Commuters from Cherokee County to Gwinnett County: 2,037

Clayton County has a total of 112,580 commuters.

- Commuters that remain in Clayton County: 42,924
- Commuters from Clayton County to Fulton County: 40,271
- Commuters from Clayton County to Cobb County: 4,053
- Commuters from Clayton County to Dekalb County: 9,024
- Commuters from Clayton County to Gwinnett County: 2,785

Gwinnett County has a total of 309,797 commuters.

- Commuters that remain in Gwinnett County: 169,000
- Commuters from Gwinnett County to Fulton County: 57,737
- Commuters from Gwinnett County to Cobb County: 8,648
- Commuters from Gwinnett County to Dekalb County: 51,481

Henry County has a total of 60,381 commuters.

- Commuters that remain in Henry County: 18,751
- Commuters from Henry County to Fulton County: 14,157
- Commuters from Henry County to Cobb County: 1,365
- Commuters from Henry County to Dekalb County: 5,597
- Commuters from Henry County to Clayton County: 13,541
- Commuters from Henry County to Gwinnett County: 1,531

Forsyth County has a total of 51,224 commuters.

- Commuters that remain in Forsyth County: 21,039
- Commuters from Forsyth County to Fulton County: 15,251

- Commuters from Forsyth County to Cobb County: 1,790
- Commuters from Forsyth County to Dekalb County: 3,067
- Commuters from Forsyth County to Gwinnett County: 5,663

Carroll County has a total of 39,730 commuters.

- Commuters that remain in Carroll County: 24,611
- Commuters from Carroll County to Fulton County: 3,570
- Commuters from Carroll County to Cobb County: 2,044
- Commuters from Carroll County to Dekalb County: 700
- Commuters from Carroll County to Paulding County: 493

Paulding County has a total of 40,830 commuters.

- Commuters that remain in Paulding County: 10,094
- Commuters from Paulding County to Fulton County: 7,432
- Commuters from Paulding County to Cobb County: 14,850
- Commuters from Paulding County to Dekalb County: 1,288
- Commuters from Paulding County to Clayton County: 440
- Commuters from Paulding County to Gwinnett County: 655

Douglas County has a total of 46,176 commuters.

- Commuters that remain in Douglas County: 16,924
- Commuters from Douglas County to Fulton County: 14,253
- Commuters from Douglas County to Cobb County: 7,450
- Commuters from Douglas County to Dekalb County: 2,211
- Commuters from Douglas County to Clayton County: 1,196
- Commuters from Douglas County to Gwinnett County: 747
- Commuters from Douglas County to Paulding County: 596

Newton County has a total of 28,560 commuters.

- Commuters that remain in Newton County: 11,545
- Commuters from Newton County to Fulton County: 2,399
- Commuters from Newton County to Cobb County: 411
- Commuters from Newton County to Dekalb County: 3,567
- Commuters from Newton County to Clayton County: 480
- Commuters from Newton County to Gwinnett County: 1,320

Fayette County has a total of 45,231 commuters.

- Commuters that remain in Fayette County: 16,977
- Commuters from Fayette County to Fulton County: 14,745
- Commuters from Fayette County to Cobb County: 1,124
- Commuters from Fayette County to Dekalb County: 1,683
- Commuters from Fayette County to Clayton County: 6,048

Walton County has a total of 29,031 commuters.

- Commuters that remain in Walton County: 11,204
- Commuters from Walton County to Fulton County: 1,666

- Commuters from Walton County to Dekalb County: 2,978
- Commuters from Walton County to Gwinnett County: 7,037

Spalding County has a total of 24,931 commuters.

- Commuters that remain in Spalding County: 13,715
- Commuters from Spalding County to Fulton County: 1,917
- Commuters from Spalding County to Cobb County: 273
- Commuters from Spalding County to Dekalb County: 583
- Commuters from Spalding County to Clayton County: 2,113

Barrow County has a total of 22,616 commuters.

- Commuters that remain in Barrow County: 7,751
- Commuters from Barrow County to Fulton County: 959
- Commuters from Barrow County to Dekalb County: 1,177
- Commuters from Barrow County to Gwinnett County: 8,229

Rockdale County has a total of 32,931 commuters.

- Commuters that remain in Rockdale County: 14,378
- Commuters from Rockdale County to Fulton County: 4,792
- Commuters from Rockdale County to Cobb County: 570
- Commuters from Rockdale County to Dekalb County: 6,187
- Commuters from Rockdale County to Clayton County: 804
- Commuters from Rockdale County to Gwinnett County: 1,985

Pickens County has a total of 11,116 commuters.

- Commuters that remain in Pickens County: 5,318
- Commuters from Pickens County to Fulton County: 741
- Commuters from Pickens County to Cobb County: 938
- Commuters from Pickens County to Dekalb County: 250
- Commuters from Pickens County to Gwinnett County: 218

Jasper County has a total of 5,123 commuters.

- Commuters that remain in Jasper County: 1,910
- Commuters from Jasper County to Fulton County: 267
- Commuters from Jasper County to Dekalb County: 238
- Commuters from Jasper County to Clayton County: 105
- Commuters from Jasper County to Gwinnett County: 57

Putnam County has a total of 8,055 commuters.

- Commuters that remain in Putnam County: 4,478
- Commuters from Putnam County to Fulton County: 177
- Commuters from Putnam County to Dekalb County: 129
- Commuters from Putnam County to Gwinnett County: 82

Floyd County has a total of 39,622 commuters.

- Commuters that remain in Floyd County: 32,440

- Commuters from Floyd County to Fulton County: 528
- Commuters from Floyd County to Cobb County: 662

Monroe County has a total of 10,316 commuters.

- Commuters that remain in Monroe County: 4,116
- Commuters from Monroe County to Fulton County: 318
- Commuters from Monroe County to Dekalb County: 140
- Commuters from Monroe County to Clayton County: 233

Heard County has a total of 4,488 commuters.

- Commuters that remain in Heard County: 1,413
- Commuters from Heard County to Fulton County: 308
- Commuters from Heard County to Cobb County: 70

Hall County has a total of 65,402 commuters.

- Commuters that remain in Hall County: 46,680
- Commuters from Hall County to Fulton County: 2,244
- Commuters from Hall County to Dekalb County: 1,716
- Commuters from Hall County to Gwinnett County: 7,189

The following table contains the vehicle miles traveled (thousand miles) for the counties in the Atlanta MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 VMT	2002-2010 VMT Growth
Fulton	11,358	4,592
Bartow	1,322	-285
Cobb	7,015	4,008
Coweta	1,562	-596
De Kalb	9,356	4,119
Cherokee	1,795	222
Clayton	3,148	1,341
Gwinnett	6,736	1,600
Henry	1,744	-508
Forsyth	1,271	-328
Carroll	1,431	-255
Paulding	1,047	-157
Douglas	1,251	465
Newton	1,049	-300
Fayette	1,197	-324
Walton	684	-104
Spalding	796	-59
Barrow	590	-123
Rockdale	924	345
Pickens	237	90
Jasper	112	70
Putnam	179	37
Floyd	948	732
Monroe	572	-283
Heard	146	40
Hall	1,897	-181

Pickens County has a very low VMT and VMT growth thus supporting the attainment/unclassifiable recommendation. Approximately 82 percent of Floyd County commuters stay within the county. This commuting pattern supports Floyd County as a separate nonattainment area. Although Jasper and Putnam have low VMT, they have large emission sources.

Factor 5: Expected growth

The following table has the population and population growth figures for the Atlanta MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	Growth 90-00	Percent Growth
Fulton	825,431	167,055	26
Bartow	82,607	20,108	36
Cobb	651,485	160,006	36
Coweta	97,771	35,362	66
De Kalb	676,996	120,028	22
Cherokee	159,295	51,699	57
Clayton	252,733	54,465	30
Gwinnett	650,771	235,538	67
Henry	139,699	60,600	103
Forsyth	116,924	54,324	123
Carroll	94,907	15,846	22
Paulding	94,184	40,067	96
Douglas	98,650	21,054	30
Newton	71,594	20,193	48
Fayette	96,611	28,848	46
Walton	67,069	22,101	57
Spalding	59,410	3,960	7
Barrow	51,016	16,423	55
Rockdale	73,558	16,020	30
Pickens	25,619	8,551	59
Jasper	12,283	2,973	35
Putnam	19,390	4,675	33
Floyd	92,606	9,314	11
Monroe	22,675	4,644	27
Heard	11,340	2,384	28
Hall	152,235	43,849	46

Pickens County has a high percent growth rate. However, the actual numbers of population growth are low which support it's recommendation as attainment.

Factor 6: Meteorology

This factor did not constitute a significant role in the decision making process.

Factor 7: Geography/topography

This factor did not constitute a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

This factor did not constitute a significant role in the decision making process.

Factor 9: Level of control of emission sources

This factor did not constitute a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included Jasper County as part of the Atlanta nonattainment area. Upon further review of additional information provided by the State, EPA is revising its recommendation and is designating Jasper County as attainment/unclassifiable, and a portion of Putnam County as nonattainment. The remainder of Putnam County will be designated attainment/unclassifiable.

Jasper County:

Jasper County emissions in tons per year are: PM (2,835), NO_x (28,144), SO₂ (210), VOC (2,453). Jasper County was added to the Atlanta metropolitan area in the 2003 OMB definition, has no monitor, a low population (12,283), and a low population density (33 people/square mile), when compared to the Atlanta MSA. For example, Fulton County, which contains the design value monitor, has a population of (825,431), and a population density of (1,560 people/square mile). The county has low emissions when compared to the Atlanta MSA. The majority of the emissions in Jasper County come from a Georgia Pacific facility which is 45 miles from the nearest violating monitor. Additionally, Jasper County has a low number of commuters (5,123) and only 667 of those commuters commute to the Atlanta MSA. The 2002 VMT (112,000) for Jasper county is lower than any county in the Atlanta MSA.

Putnam County:

In the June 29, 2004, letters from EPA to the State responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant to include it in the nonattainment area. Putnam County, GA is one of those counties.

Putnam County is adjacent to Jasper County which was added to the Atlanta metropolitan area in the 2003 OMB definition, and has no monitor. Putnam County emissions in tons per year and percent of MSA are: PM (3,726), SO₂ (65,560), NO_x (34,202), and VOC (1,175). The NO_x and SO₂ emissions are primarily from the Harlee Branch power plant which is approximately 67 miles from, and downwind of, the nearest violating monitor. Putnam County has a total of (8,055) commuters of which only (388) commute to the Atlanta MSA. The 2002 VMT (179,000) for Putnam County is lower than any county in the Atlanta MSA.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small "free-standing" boundaries that are

considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifier (StateFIPs-CoFIPs-Tract#-Block Group#) 13-237-9603-1 portion of Putnam County as part of the Atlanta nonattainment area.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Atlanta, GA area: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Heard (Partial), Henry, Newton, Paulding, Putnam (Partial), Rockdale, Spalding, and Walton.

6.4.2.2 Macon Area MSA

The Macon MSA contains the counties of: Bibb, Houston, Jones, Peach, and Twiggs.

On February 13, 2004, the State of Georgia submitted to EPA their PM 2.5 nonattainment recommendations. Georgia recommended only counties which contained a monitored violation and provided no further justification. On June 17, 2004, the State submitted additional information and revised recommendations. The revision recommended that Bibb County be nonattainment and Monroe County as a partial county nonattainment area. EPA agrees with the State's recommendation.

Area	EPA Recommendation	State Recommendation
Macon, GA	Full counties: Bibb, Monroe as partial	Full counties: Bibb, Monroe as partial

The following is a brief summary of the 9 criteria for the Macon MSA and surrounding counties. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM2.5, SOx, NOx, VOC, and ammonia emissions in tons and weighted scores for the counties in the Macon MSA and some adjacent counties. (MSA counties are in **bold**.)

County	PM	SOx	NOx	VOC	AMM	Weighted score	Cumulative Weighted score
Bibb	2,723	8,521	11,353	10,061	370	46.9	46.9
Houston	1,243	1,666	6,285	5,627	629	18.3	65.2
Twiggs	1,203	198	2,263	1,141	92	18.2	83.4
Jones	455	105	1,537	1,506	230	10.5	93.9
Peach	478	89	2,025	2,261	202	6.1	100.0
Monroe	3,403	75,571	34,069	2,189	644	104.3	
Putnam	3,726	65,560	34,202	1,175	399	100.8	
Jasper	2,835	210	28,144	2,453	360	69.0	
Wilkinson	4,397	170	1,368	821	55	48.3	
Laurens	1,222	2,674	4,717	3,688	444	28.6	
Dooly	1,130	140	2,115	1,442	676	19.8	
Macon	1,124	1,395	2,539	1,248	1,349	15.7	
Upson	476	84	1,568	1,926	286	10.3	
Taylor	398	76	966	622	833	9.7	
Baldwin	451	122	2,007	2,949	203	8.9	
Crawford	346	38	645	570	242	8.1	
Butts	357	112	1,609	1,438	88	7.6	
Pulaski	434	37	452	503	263	6.9	
Bleckley	341	31	505	642	146	6.2	
Lamar	257	59	812	1,090	491	4.9	

Based on this analysis, Monroe County has significant emissions which contribute to the violations at the Bibb County monitor. Although Jasper and Putnam counties also have significant emissions, EPA believes those counties should be included in the Atlanta nonattainment area, rather than the Macon nonattainment area. For the counties in the Macon MSA, there is a natural break in the weighted emission score between Bibb and the remaining counties.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Bibb	15.2
Houston	12.8
Wilkinson	14.9

There are two counties containing monitors in the Macon area. Bibb County contains a violating monitor while Houston County contains an attaining monitor. An adjacent county, Wilkinson, also contains an attaining monitor.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Macon MSA and some adjacent counties. Urban population figures were not available. (MSA counties are in **bold**.)

County	2002 Population	Percent Population of MSA	Population Density
Bibb	154,824	47	619
Houston	116,768	35	310
Twiggs	10,545	3	29
Jones	24,492	7	62
Peach	24,224	7	160
Monroe	22,675		57
Putnam	19,390		56
Jasper	12,283		33
Wilkinson	10,357		23
Laurens	45,890		56
Dooly	11,505		29

Twiggs, Jones, and Peach counties all have low populations with low populations densities which support their attainment recommendations. Houston County's population density is approximately half that of Bibb County's which supports its attainment recommendation.

Factor 4: Traffic and commuting patterns

Commuting Information:

Bibb County, the design value county, has a total of 63,229 commuters.

- Commuters who remain in Bibb County: 54, 125

Houston County has a total of 53,089 commuters.

- Commuters that remain in Houston County: 39, 954
- Commuters from Houston County to Bibb County: 8,570

Twiggs County has a total of 4,086 commuters.

- Commuters who remain in Twiggs County: 1,019
- Commuters from Twiggs County to Bibb County: 1,929

Jones County has a total of 10,543 commuters.

- Commuters who remain in Jones County: 2,472
- Commuters from Jones County to Bibb County: 5,988

Peach County has a total of 9,731 commuters.

- Commuters that remain in Peach County: 4,137
- Commuters from Peach County to Bibb County: 2,361

Monroe County, an adjacent county, has a total of 10,316 commuters.

- Commuters that remain in Monroe County: 4,116
- Commuters from Monroe County to Bibb County: 3,262

Putnam County has a total of 8,055 commuters.

- Commuters that remain in Putnam County: 4,479
- Commuters from Putnam County to Bibb County: 329

Jasper County has a total of 5,123 commuters.

- Commuters that remain in Jasper County: 1,910
- Commuters from Jasper County to Bibb County: 112

Wilkinson County has a total of 4,060 commuters.

- Commuters that remain in Wilkinson County: 1,933
- Commuters from Wilkinson County to Bibb County: 538

Laurens County has a total of 18,986 commuters.

- Commuters that remain in Laurens County: 16,046
- Commuters from Laurens County to Bibb County: 501

Dooly County has a total of 4,160 commuters.

- Commuters that remain in Dooly County: 2,399
- Commuters from Dooly County to Bibb County: 75

The commuting patterns support Bibb County as the only MSA county in the nonattainment area.

The following table contains vehicle miles traveled (thousand miles) for the counties in the Macon MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 VMT	VMT Growth 02-10
Bibb	1,653	1,096
Houston	1,068	130
Twiggs	469	-270
Jones	283	129
Peach	496	-210
Monroe	572	-283
Putnam	179	37
Jasper	112	70
Wilkinson	152	68
Laurens	1,037	-527
Dooly	348	-185

Twiggs, Jones, and Peach counties have low VMTs with low VMT growth, or negative growth. Houston County has a low VMT growth. This information supports the attainment recommendations for these counties.

Factor 5: Expected growth

The following table has the population and population growth figures for the Macon MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	Growth 90-00	Percent Growth
Bibb	154,824	3,920	3
Houston	116,768	21,557	24
Twiggs	10,545	784	8
Jones	24,492	2,900	14
Peach	24,224	2,479	12
Monroe	22,675	4,644	27
Putnam	19,390	4,675	33
Jasper	12,283	2,973	35
Wilkinson	10,357	-8	-0
Laurens	45,890	4,886	12
Dooly	11,505	1,624	16

Twiggs, Jones, and Peach counties all have low populations with low growth rates. This supports their recommendations as attainment/unclassifiable.

Factor 6: Meteorology

This factor did not constitute a significant role in the decision making process.

Factor 7: Geography/topography

This factor did not constitute a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

This factor did not constitute a significant role in the decision making process.

Factor 9: Level of control of emission sources

This factor did not constitute a significant role in the decision making process.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Macon, GA area: Bibb and Monroe (Partial).

6.4.2.3 Athens Area MSA

The Athens MSA contains the counties of: Clarke, Madison, and Oconee.

On February 13, 2004, the State of Georgia submitted to EPA their PM 2.5 nonattainment recommendations. Georgia recommended only counties which contained a monitored violation and provided no further justification. On June 17, 2004, the State submitted additional information and revised recommendations. The revision recommended that Clarke County be designated as nonattainment and that Oconee and Madison counties be designated as attainment.

Area	EPA Recommendation	State Recommendation
Athens, GA	Full counties: Clarke, Oconee, and Madison	Full counties: Clarke

The following is a brief summary of the 9 criteria for the Athens MSA and surrounding Counties. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted scores for the counties in the Athens MSA and some adjacent counties. (MSA counties are in **bold**.)

County	PM	SO2	NOx	VOC	AMM	Weighted score	Cumulative Weighted score
Clarke	395	215	3,362	5,223	390	41.2	41.2
Oconee	507	111	1,599	2,047	1,050	30.5	71.7
Madison	543	70	1,449	1,219	3,013	28.3	100
Walton	919	176	2,759	3,952	755	57.1	
Jackson	817	151	3,639	2,935	3,584	52.2	
Greene	437	161	2,137	1,582	468	42.3	
Barrow	706	128	2,340	2,738	1,632	40.2	
Morgan	390	121	2,422	3,176	1,129	33.1	
Franklin	449	84	2,068	1,813	4,128	27.6	
Elbert	410	71	1,357	1,280	343	27.5	
Wilkes	340	46	507	756	491	26.9	
Oglethorpe	343	40	639	730	1,664	24.7	
Hart	505	63	1,321	1,595	1,516	24.2	
Banks	325	65	1,178	1,127	3,407	22.3	
Taliaferro	131	32	718	355	89	13.1	

Analysis of this factor indicates that Clarke, Oconee, and Madison counties have emissions with potential to contribute to the violation in Clarke County.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Clarke	15.6

There is one violating monitor in Clarke County. Therefore, Clarke County is nonattainment.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Athens MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	Percent Population of MSA	Population Density
Clarke	103,881	66	859
Oconee	27,264	17	147
Madison	26,717	17	94
Walton	67,069		204
Jackson	45,374		133
Greene	15,101		39
Barrow	51,016		315
Morgan	16,301		47
Franklin	20,778		79
Elbert	20,667		56
Wilkes	10,734		23
Ogelthorpe	13,176		30
Hart	23,249		100
Banks	15,123		65
Taliaferro	1,977		10

Walton County has appreciable population, but is population that is included in the Atlanta nonattainment area.

Factor 4: Traffic and commuting patterns

Commuting Information:

Jackson County has total of 19,132 commuters.

- Commuters that stay in Jackson County: 7,960
- Commuters that commute to Clarke County: 3,022

Clarke County, the design value county, has a total of 48,241 commuters.

- Commuters that stay in Clarke County: 39,009

Oconee County has a total of 12,903 commuters.

- Commuters that stay in Oconee County: 3,630
- Commuters that commute to Clarke County: 6,696

Madison County has a total of 12,257 commuters.

- Commuters that stay in Madison County: 3,432
- Commuters that commute to Clarke County: 6,048

Greene County has a total of 5,609 commuters.

- Commuters that stay in Greene County: 3,856
- Commuters that commute to Clarke County: 266

Morgan County has a total of 7,278 commuters.

- Commuters that stay in Morgan County: 4,570
- Commuters that commute to Clarke County: 417

Franklin County has a total of 8,844 commuters

- Commuters that stay in Franklin County: 4,766
- Commuters that commute to Clarke County: 461

Elbert County has a total of 8,576 commuters.

- Commuters that stay in Elbert County: 6,238
- Commuters that commute to Clarke County: 417

Hart County has a total of 10,275 commuters.

- Commuters that stay in Hart County: 6,768
- Commuters that commute to Clarke County: 272

Wilkes County has a total of 4,457 commuters.

- Commuters that stay in Wilkes County: 3,464
- Commuters that commute to Clarke County: 181

More than 50 percent of the commuters in Oconee County and almost 50 percent of the commuters in Madison County commute to Clarke County.

The following table contains vehicle miles traveled (thousand miles) for the counties in the Athens MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 VMT	VMT Growth 02-10
Clarke	820	929
Oconee	330	43
Madison	351	96
Jackson	748	-226
Greene	354	-153
Morgan	514	-302
Madison	351	96
Franklin	546	-228
Elbert	259	43
Hart	269	59
Wilkes	95	53

Analysis of this factor indicates that Oconee and Madison counties have commuting patterns and VMT which contribute to the violation in Clarke County.

Factor 5: Expected growth

The following table has the population and population growth figures for the Athens MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	Growth 90-00	Percent Growth
Clarke	103,881	13,895	16
Oconee	27,264	8,607	49
Madison	26,717	4,680	22
Jackson	45,374	11,584	39
Greene	15,101	2,613	22
Morgan	16,301	2,574	20
Franklin	20,778	3,635	22
Elbert	20,667	1,562	8
Hart	23,249	3,285	17
Wilkes	10,734	90	1

Analysis of this factor indicates that Oconee and Madison counties contain growth patterns which potentially contribute to the violation in Clarke County.

Factor 6: Meteorology

This factor did not constitute a significant role in the decision making process.

Factor 7: Geography/topography

This factor did not constitute a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

This factor did not constitute a significant role in the decision making process.

Factor 9: Level of control of emission sources

This factor did not constitute a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included the counties of Oconee and Madison as part of the Athens nonattainment area. Upon further review of additional information provided by the State, EPA is revising its recommendation and is designating Oconee and Madison as attainment/unclassifiable.

Oconee County:

Oconee County emissions in tons per year and percent of MSA emissions are: SO₂ (111 /28%), NO_x (1,599/25%), PM (507/35%) and VOC (2,047/24%). These emissions are low when compared to Clarke County which has over half of the SO₂, NO_x, and VOC emissions for the MSA. Oconee County also has a low population (27,264/17% of MSA), and a low population density (147 people/square mile) when compared to Clarke County which has a population of (103,881/66%) and a high population density (859 people/square mile).

Oconee County has a low total number of commuters (12,903) of which 6,696 commute to Clarke County. This is a low number of commuters compared to Clarke County's (48,241) of which 80 percent (39,009) remain in Clarke County. Of the daily VMT in the MSA, 55 percent occurs in Clarke County. Oconee County does not contain a monitor.

Madison County:

Madison County emissions in tons per year and percent of MSA are: SO₂ (70/18%), NO_x (1,449/23%), PM (543/38%), and VOC (1,219/14%). These emissions are low when compared to Clarke County which has over half of the SO₂, NO_x, and VOC emissions for the MSA. Madison County also has a low population (26,717/17% of MSA), and a low population density (94 people/square mile) when compared to Clarke County which has a population of (103,881/66%) and a high population density (859 people/square mile).

Madison County has a low total number of commuters (12,257) of which 6,048 commute to Clarke County. This is a low number of commuters compared to Clarke County's (48,241) of

which 80 percent (39,009) remain in Clarke County. Of the daily VMT in the MSA, 55 percent occurs in Clarke County. Madison County does not contain a monitor.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Athens, GA area: Clarke

6.4.2.4 Chattanooga Area

The Chattanooga MSA contains the following Tennessee counties: Marion and Hamilton; and the following Georgia Counties: Dade, Walker, and Catoosa. Based on air quality data for 2001-2003, the monitor with the highest design value in Hamilton County has a design value of 16.1 and the monitor in Walker County has a design value of 15.6. No other counties in the MSA contain ambient air monitors. The State of Tennessee recommended as nonattainment the county of Hamilton and the State of Georgia recommended as nonattainment the county of Walker. The States have recommended that all other counties be designated attainment. The State of Tennessee submitted some justification for this recommendation, however, they indicated that the detailed emission information would be provided at a later date. EPA is modifying the State of Tennessee's recommendation and will review the additional information during the 120 day period following the notification letter.

EPA has received some information from the State of Tennessee that Marion (MSA) County should be designated attainment for the PM_{2.5} standard and no justification from the State of Georgia indicating that any other counties should be included or excluded from the Chattanooga PM_{2.5} nonattainment area. Adjacent counties with significant emissions include McMinn and Roane Counties which are attached to the Knoxville nonattainment area and Floyd County which is a separate nonattainment area.

Additionally we have included in our recommended nonattainment area Jackson County, AL, that is adjacent to the Chattanooga MSA, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility or facilities, should be designated nonattainment. Therefore EPA is modifying the States' recommendations to include all of the counties in the MSA and the adjacent county of Jackson, Alabama.

Area	EPA Recommendation	States Recommendations
Chattanooga	Full counties: Marion, Hamilton, TN; Dade, Walker, Catoosa, GA; Jackson, AL	Full counties: Hamilton and Walker

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table contains the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted emissions scores for the counties in the Chattanooga MSA and some adjacent counties. (MSA counties are in bold.)

County	PM	SO _x	NO _x	VOC	Amm	Weighted Emissions Score	Cumulative Weighted Emissions Score
Hamilton	1,498	5,300	20,048	27,150	1,022	49.5	49.5
Walker	856	632	2,798	4,516	958	17.9	67.4
Marion	679	477	3,156	2,640	501	14.1	81.5
Catoosa	617	167	3,085	3,601	680	11.9	93.4
Dade	302	107	2,415	1,574	285	6.5	99.9
Roane	4967	92331	30865	4300	285	296.9	
Jackson, AL	4389	44333	31502	4742	1494	176.1	
Floyd, GA	10057	31821	22736	7139	976	154.0	
McMinn	3348	10216	10829	5546	1268	73.3	
Whitfield, GA	2732	1747	7283	7386	991	54.2	
Rhea	1405	302	2625	3643	149	31.2	
Loudon	804	4035	5899	5338	360	24.3	
DeKalb, AL	1193	741	4776	5867	5765	21.3	
Bradley	1233	419	4230	7551	1916	21.1	
Warren	1164	1189	1869	3675	446	20.7	
Monroe	743	154	2387	3420	554	16.4	
Gordon, GA	872	200	3645	4019	2630	15.8	
Fannin, GA	614	65	887	1266	283	14.2	
Franklin	644	482	2100	2929	1512	13.4	
Chattooga, GA	450	1228	1834	1634	197	11.7	
Murray, GA	576	130	2067	1700	910	11.4	
Polk	295	2066	900	949	553	11.3	
Cherokee, NC	428	143	921	1753	111	10.6	
Grundy	202	164	1000	1150	1170	4.8	
Bledsoe	203	31	475	528	335	4.5	
Meigs	198	112	885	871	118	4.3	
Sequatchie	140	22	304	591	173	3.4	
Van Buren	118	178	291	320	74	3.3	

Based on the analysis for this factor there appears to be emissions in all MSA counties and the adjacent county of Jackson, AL, which show a potential to contribute. Other adjacent counties with large emissions (McMinn and Roane, TN and Floyd, GA) are included in other nonattainment areas.

Factor 2: Air quality in potentially included versus excluded areas

The following table contains the 2001-2003 PM_{2.5} Design Values for all Chattanooga MSA Counties and adjacent counties. (MSA counties are in bold.)

County	2001-2003 design value
Hamilton	16.1
Walker	15.6
Roane	14.2
Floyd, GA	15.7
McMinn	14.6
Loudon	15.4 *
DeKalb, AL	14.7

* Incomplete data that is not sufficient to determine attainment/nonattainment. Data substitution does not apply.

Based on this factor, Hamilton County, TN and Walker and Floyd Counties in GA are violating the PM 2.5 standard. Catoosa County, GA is located between violating monitors in Hamilton and Walker Counties.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table contains the populations for the counties in the Chattanooga MSA and some adjacent counties. Urban population figures were not available. (MSA counties are in bold.)

County	2002 Population	Percent of MSA Population (2002)	2002 Population Density (people/mile ²)
Hamilton	309,321	65.7	570
Walker	61,949	13.2	139
Marion	27,654	5.9	55
Catoosa	56,341	12.0	348
Dade	15,615	3.3	90
Roane	52,316		145
Jackson, AL	54,035		50
Floyd, GA	92,606		181
McMinn	50,051		116
Whitfield, GA	87,037		300

Based on the analysis for this factor, there appears to be population sufficient to indicate a contribution by the following MSA counties: Hamilton, Walker, and Catoosa. The five adjacent counties also have population with a potential to contribute.

Factor 4: Traffic and commuting patterns

Commuting Information:

Hamilton has a working population of 146, 824
–Commuters who remain in Hamilton: 133,644 (91%)

Marion has a working population 11766.
–Commuters who remain in Marion: 5596 (48%)
–Commuters from Marion to Hamilton: 4271

Dade has a working population of 6983.
–Commuters who remain in Dade: 2363
–Commuters from Dade to Hamilton:3091 (44%)
–Commuters from Dade to Walker: 747

Catoosa has a working population of 26710.
–Commuters who remain in Catoosa: 7167
–Commuters from Catoosa to Hamilton: 12320 (46%)
–Commuters from Catoosa to Walker:1937

Walker has a working population of 27223.
–Commuters who remain in Walker: 11244 (41%)
–Commuters from Walker to Hamilton: 9098

Whitfield, GA has a working population of 38,909
–Commuters who remain in Whitfield: 33,796 (87%)
–Remaining commuters do not commute to the Chattanooga MSA

DeKalb, AL has a working population of 7798
–Commuters who remain in DeKalb: 5179 (66%)
–Remaining commuters do not commute to the Chattanooga MSA

The following table contains the vehicle miles traveled (thousand miles) for the counties in the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 VMT (thousand miles/year)
Hamilton	3,743
Walker	742
Marion	654
Catoosa	810
Dade	512
Roane	784
Jackson, AL	786
Floyd, GA	948
McMinn	787
Whitfield, GA	1423

Based on the analysis for this factor the VMT for all MSA counties indicate a potential to contribute. Although Whitfield County has a relatively high VMT, none of the commuters go to the Chattanooga MSA.

Factor 5: Population Growth

The following table has the population and population growth figures for the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 Population	Growth (90-00)	% Growth (90-00)
Hamilton	309,321	22360	8
Walker	61,949	2713	5
Marion	27,654	2916	12
Catoosa	56,341	10818	25
Dade	15,615	2007	15
Roane	52,316	4683	10
Jackson, AL	54,035	6130	13
Floyd, GA	92,606	9314	11
McMinn	50,051	6632	16
Whitfield, GA	87,037	11063	15

Based on the analysis for this factor, there appears to be significant growth on a percentage basis in Catoosa County that indicates a contribution to the air quality in the Chattanooga MSA.

Factor 6: Meteorology

This factor did not constitute a significant role in the decision making process.

Factor 7: Geography/topography

The Chattanooga area does not have any geographical or topographical boundaries limiting its airshed.

This factor did not constitute a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

Hamilton and Meigs Counties, TN and Catoosa County, GA were designated nonattainment for the 8-hour ozone standard on April 15, 2004.

This factor did not constitute a significant role in the decision making process.

Factor 9: Level of control of emission sources

Sources in the Chattanooga area are subject to Prevention of Significant Deterioration (PSD) requirements, Control Technology Guidelines Reasonable Available Control Technology (CTG

RACT) - (Hamilton County only), Maximum Achievable Control Technology (MACT) for Hazardous Air Pollutants (HAP), New Source Performance Standards (NSPS), and the NO_x SIP call.

This factor did not constitute a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included Dade County as part of the Chattanooga nonattainment area. Upon further review of additional information provided by the State, EPA is revising its recommendation and designating Dade County as attainment/unclassifiable.

Dade County:

Dade County emissions in tons per year and percent of MSA are: PM (302/8%), SO₂ (107/1.6%), NO_x (2,415/7.7%), and VOC (1,574/4%). These are the lowest emissions of any county in the MSA. Dade County contains no major point sources of precursor emissions, has the lowest population in the MSA (15,615), and low population density 90 people/square mile. Dade County constitutes approximately 3 percent of the total MSA commuters. Dade County contains no monitor.

In addition, the State's topography analysis indicates that the Lookout Mountain Ridge (2,100 feet) separates the low level emissions in Dade County from the violating monitors. The County is located to the west of the ridge, while the violating monitors reside to the east of the ridge.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Chattanooga, TN-GA area: Catoosa and Walker.

6.4.2.5 Columbus Area MSA

The following is the 9 factor analysis for Columbus MSA and surrounding Counties. Alabama's submittal in February 2004, recommended that Russell County be designated nonattainment for the fine particulate matter (PM_{2.5}), based on 2001 - 2003 monitoring data. Georgia's submittal in June 2004, recommended that Harris, Muscogee and Chattahoochee Counties be designated attainment for PM_{2.5}. Based on the following analysis EPA recommends that Lee and Russell counties in Alabama, and Harris, and Muscogee Counties in Georgia, should be included in the PM_{2.5} nonattainment area. Lee County is adjacent to the MSA, has high VMT and a large population. Russell County has a violating monitor and the State recommended it as nonattainment. Harris County has relatively high NO_x and VOC emissions and relatively high VMT. Muscogee County has high NO_x and VOC emissions, high VMT and a large population. Based on the following analysis, EPA agrees with the recommendation that Barbour, Chambers, Montgomery, Elmore and Tallapoosa Counties in Alabama, and Chattahoochee, Troup, Stewart,

Meriwether, Sumter Counties in Georgia, should be attainment/unclassifiable for PM_{2.5} based on low emissions, low VMT and low population.

Area	EPA Recommendation	State Recommendation
Columbus, GA	Full counties: Lee and Russell Counties in Alabama and Harris and Muscogee Counties in Georgia	Full counties: Russell County, Alabama

9 Factor Analysis for the Columbus, Georgia MSA

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC, and NH₃ emissions in tons, and weighted emissions scores for the Columbus Area and surrounding counties. The MSA counties are in **bold**.

Columbus MSA and Surrounding Counties Emissions

County	PM	SO ₂	NO _x	VOC	NH ₃	Weighted Emissions Score	Cumulative Weighted Emissions Score
Russell, AL	1,344	2,550	5,718	4,434	179	35.1	35.1
Harris, GA	590	104	2,856	1,748	128	26.8	61.9
Muscogee, GA	513	803	5,965	9,476	323	25.4	87.3
Chattahoochee, GA	208	43	387	482	15	12.7	100
Troup, GA	1,194	422	12,277	8,223	382	48.7	
Montgomery, AL	1,421	6,292	10,454	14,966	973	43.3	
Lee, AL	1,043	1,425	5,125	7,474	333	42.8	
Barbour, AL	874	419	2,208	2,529	497	41.6	
Sumter, GA	2,578	1,725	1,726	2,262	847	40.5	
Meriwether, GA	844	190	1,866	3,006	167	33.7	
Elmore, AL	1,014	517	4,443	4,368	326	30.8	
Tallapoosa, AL	679	655	1,993	3,230	263	26.5	
Chambers, AL	579	527	2,350	2,882	124	23.9	
Stewart, GA	429	32	360	464	189	23.3	
Taylor, GA	398	76	966	622	833	18.3	
Macon, AL	412	223	2,242	1,871	133	17.1	
Talbot, GA	288	70	903	520	74	15.9	
Marion, GA	314	32	328	517	470	15.4	
Bullock, AL	273	93	407	570	214	12.7	
Webster, GA	303	128	358	201	114	12.6	
Schley, GA	192	14	195	290	163	8.4	

Based on the analysis for this factor, there appear to be emissions in Lee County, Alabama, that contribute to the violation in Russell County.

Factor 2: Air quality in potentially included versus excluded areas.

Columbus MSA and Surrounding Counties Design Value (DV)

County	2001-2003 DV
Russell, AL	15.3
Muscogee, GA	14.7
Montgomery, AL	14.2

Muscogee and Montgomery Counties have monitors that show attainment of the PM_{2.5} standard while Russell County is violating the standard.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas.

The following table has the populations for the Counties in the Columbus MSA and adjacent Counties.

Columbus MSA and Surrounding Counties Population & Area

County	Population 2002	Percent in MSA	Population Density 2002
Russell, AL	49,415	18	77
Harris, GA	25,092	9	54
Muscogee, GA	185,948	67	861
Chattahoochee, GA	15,440	6	62
Troup, GA	59,767		144
Montgomery, AL	223,346		283
Lee, AL	118,123		194
Barbour, AL	28,826		33
Sumter, GA	33,247		69
Meriwether, GA	22,623		45
Elmore, AL	68,771		111
Tallapoosa, AL	40,946		57
Chambers, AL	36,251		61
Stewart, GA	5,040		11

Lee County is adjacent to Russell County and its population (118,123) is about two and half times that of Russell County (49,415).

Factor 4: Traffic and commuting patterns

Commuting Information:

Russell County, AL has a total of 19,859 commuters.

- Commuters who remain in Russell County 7,051 (36%)

Harris County, GA has a total of 11,811 commuters.

- Commuters from Lee County to Russell County 214 (2%)

- Commuters who remain in Harris County 2,867 (24%)

Muscogee County, GA has a total of 82,977 commuters.

- Commuters from Muscogee County to Russell County 2,479 (3%)
- Commuters who remain in Muscogee County 71,862 (87%)

Chattahoochee County, GA has a total of 8,538 commuters.

- Commuters who remain in Chattahoochee County 5,482 (64%)

Troup County, GA has a total of 26,339 commuters.

- Commuters who remain in Troup County 22,074 (84%)

Montgomery County, AL has a total of 96,943 commuters.

- Commuters who remain in Montgomery County 90,943 (94%)

Lee County, AL has a total of 52,119 commuters.

- Commuters who remain in Lee County 35,549 (68%)
- Commuters from Lee County to Russell County 2,682 (5%)

Barbour County, AL has a total of 10,023 commuters.

- Commuters who remain in Barbour County: 8,370 (84%)
- Commuters from Lee County to Russell County 335 (3%)

Sumter County, GA has a total of 13,963 commuters.

- Commuters who remain in Sumter County 11,652 (83%)

Meriwether County, GA has a total of 8,893 commuters.

- Commuters who remain in Meriwether County 4,114 (46%)

Elmore County, AL has a total of 28,143 commuters.

- Commuters who remain in Elmore County 9,415 (33%)

Tallapoosa County, AL has a total of 17,009 commuters.

- Commuters who remain in Tallapoosa County 12,125 (71%)

Chambers County, AL has a total of 15,480 commuters.

- Commuters who remain in Chambers County 9,281 (60%)

Stewart County, GA has a total of 1,892 commuters.

- Commuters who remain in Stewart County 965 (51%)

There are no Counties that have significant commuters commuting to Russell County.

Columbus MSA and Surrounding Counties VMT

County	VMT 2002	VMT Growth 02-10
Russell, AL	671	276
Harris, GA	547	-207
Muscogee, GA	1,594	534
Chattahoochee, GA	56	160
Troup, GA	1,454	-839
Montgomery, AL	2,565	642
Lee, AL	1,119	457
Barbour, AL	431	-129
Sumter, GA	405	-62
Meriwether, GA	271	138
Elmore, AL	615	168
Tallapoosa, AL	502	-56
Chambers, AL	378	-44
Stewart, GA	75	47

Over 50% of the VMT in the MSA is in Muscogee County, Georgia. As noted above, none of the adjacent Counties have appreciable commuting into the MSA.

Factor 5: Expected growth

The following table has the population and population growth figures for the Columbus MSA and surrounding Counties.

Columbus MSA and Surrounding Counties Population/Growth

County	Population 2002	Growth 90-00	Percent Growth
Russell, AL	49,415	2,896	6
Harris, GA	25,092	5,907	33
Muscogee, GA	185,948	7,013	4
Chattahoochee, GA	15,440	-2,052	-12
Troup, GA	59,767	3,243	6
Montgomery, AL	223,346	14,425	7
Lee, AL	118,123	27,946	32
Barbour, AL	28,826	3,621	14
Sumter, GA	33,247	2,972	10
Meriwether, GA	22,623	123	1
Elmore, AL	68,771	16,664	34
Tallapoosa, AL	40,946	2,649	7
Chambers, AL	36,251	-293	-1
Stewart, GA	5,040	-402	-7

Harris County, Georgia has large growth on a percentage basis.

Factor 6: Meteorology.

A wind analysis using wind data from the Columbus, Georgia Airport was completed to evaluate the predominant wind direction(s) in Phenix City over the 3-year period on all days. There is a large easterly component to the winds during the 3-year time period., but there is not sufficient information to use meteorology as a deciding factor for an annual average..

Factor 7: Geography/topography

This factor did not constitute a significant role in the decision making process.

Factor 8 Jurisdictional boundaries.

This factor did not constitute a significant role in the decision making process.

Factor 9 Level of control of emission sources.

Reasonable Available Control Technology for VOC has been in place since 1979

Stage 1 Vapor Recovery has been in place since 1990

NOx SIP Call requires large reductions in NOx emissions from major utilities, large industrial boilers, gas turbines and cement kilns (seasonal for Macon, Tallapoosa, Chambers, Elmore and Lee Counties).

Tier II National Fuel Standard (starting 2004)

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included the Counties of Lee in Alabama and Harris in Georgia as part of the Columbus, GA nonattainment area. Upon further review of additional information provided by the states, EPA is revising its recommendation and is designating Lee County, AL and Harris County, GA as attainment/unclassifiable.

Harris County:

Harris County, Georgia, is being designated attainment/unclassifiable because it has low population in the MSA which is only 9% (25,092) as compared to 185,948 in Muscogee County, the most populated County. Only 214 of Harris County commuters commute into Russell County, where the violating monitor is located, and it has low VMT (547,000) as compared to 1,594,000 in Muscogee. Harris County has no major point sources of precursor emissions and comparatively low emissions of 590 tons of PM, 104 tons of SO₂, and 2,856 tons of NO_x.

We considered the data in the request for spatial averaging for the Columbus area, which was denied, while evaluating the other factors and determined that Harris County is not contributing to the violations.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Columbus, GA-AL area: Muscogee.

6.4.2.6 Augusta Area

On February 13, 2004, the State of Georgia submitted to EPA their PM 2.5 nonattainment recommendations. Georgia recommended only counties which contained a monitored violation and provided no further justification. On June 15, 2004, the State submitted additional information and revised recommendations for the Augusta area. The revision recommended that Richmond County be unclassifiable.

Richmond County has two PM2.5 monitors with air quality data for 2001-2003. The data for one monitor demonstrates attainment and the other monitor has incomplete data for 2001-2003 that was violating. EPA's analysis of all the available monitoring data indicates that the area should be designated as attainment/unclassifiable.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as attainment/unclassifiable for the Augusta, GA area: Richmond.

6.4.3 EPA 9-Factor Analyses for Kentucky for the Designation of PM2.5 Nonattainment Areas

6.4.3.1 Cincinnati-Hamilton Area

The MSA contains the Kentucky Counties of Boone, Campbell, Kenton, Grant, Pendleton, Gallatin; the Ohio Counties of Hamilton, Clermont, Butler, Warren, Brown; and the Indiana Counties of Dearborn and Ohio.

The following counties are violating the PM2.5 standard: Hamilton County, Ohio; Butler County, Ohio; and Montgomery County, Ohio.

In February 2004, Kentucky recommended that all Kentucky counties in the Cincinnati-Hamilton MSA be designated attainment for the PM2.5 standard. EPA is modifying Kentucky's recommendation to include Boone, Campbell and Kenton Counties in the Cincinnati-Hamilton nonattainment area. Boone County has significant emissions, relatively high population growth, and a large (>10,000 tons per year SO₂) power plant located in the County. Campbell and Kenton Counties have significant VMT, significant numbers of commuters into violating Hamilton County, and both counties part of the Cincinnati 1-hour ozone nonattainment area due to violating monitors. Kenton County also has monitoring data close to the standard. EPA agrees that the remaining KY MSA counties of Gallatin, Grant, and Pendleton should be designated as attainment/unclassifiable due to low emissions, very low population relative to the area, and very low numbers of commuters into the violating counties.

EPA agrees that the adjacent counties of Carroll and Mason should be designated attainment/classifiable for the PM_{2.5} standard, although they have significant emissions due to power plants. These counties have relatively low populations, low population growth, and low VMT. Further, their commuting patterns and distance from the violating monitors indicate that these counties do not contribute to the violations in the area. The other adjacent counties do not contribute and therefore, will be designated as attainment/unclassifiable.

Area	EPA Recommendation	State Recommendation
Cincinnati-Hamilton, OH-KY-IN	Full counties: Boone County Campbell County Kenton County	Full counties: none

The following is a brief summary of the nine criteria for the Cincinnati-Hamilton, OH-KY-IN area. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted emissions scores for the counties in the Cincinnati-Hamilton MSA and surrounding counties. (MSA counties are in bold; Kentucky MSA counties in *bold italics*.)

County	PM	SO _x	NO _x	VOC	Amm	Score	Cum. Score
Hamilton, OH	7,601	88,053	58,398	47,014	2,422	30.3	30.3
Clermont, OH	6,443	84,599	45,618	7,638	326	20.0	50.3
Dearborn, IN	3,581	56,773	31,138	3,732	246	11.4	61.7
Butler, OH	3,153	13,204	19,735	14,228	1,363	9.9	71.6
<i>Boone, KY</i>	<i>1,946</i>	<i>14,717</i>	<i>15,794</i>	<i>6,644</i>	<i>256</i>	<i>7.7</i>	<i>79.3</i>
Warren, OH	1,844	895	7,565	7,003	417	6.9	86.2
<i>Kenton, KY</i>	<i>741</i>	<i>1,573</i>	<i>8,365</i>	<i>7,392</i>	<i>285</i>	<i>4.2</i>	<i>90.4</i>
<i>Campbell, KY</i>	<i>590</i>	<i>860</i>	<i>5,294</i>	<i>4,421</i>	<i>267</i>	<i>2.8</i>	<i>93.2</i>
Brown, OH	748	395	2,927	1,995	294	2.0	95.2
Grant, KY	381	210	2,664	1,364	257	1.8	97.0
<i>Pendleton, KY</i>	<i>363</i>	<i>597</i>	<i>3,396</i>	<i>900</i>	<i>186</i>	<i>1.5</i>	<i>98.5</i>
<i>Gallatin, KY</i>	<i>367</i>	<i>350</i>	<i>2,365</i>	<i>904</i>	<i>192</i>	<i>1.0</i>	<i>99.5</i>
Ohio, IN	142	113	682	380	238	0.5	100.0
Adams, OH	6,417	125,136	52,992	1,508	431	19.4	N/A
Montgomery, OH	2,542	11,214	24,177	28,598	1,170	12.2	N/A
Carroll, KY	3,547	53,086	26,269	3,249	159	10.3	N/A
Mason, KY	2,316	38,142	16,071	1,640	520	7.0	N/A
Greene, OH	1,516	1,895	8,841	5,827	538	4.0	N/A
Preble, OH	963	428	2,765	2,638	762	2.2	N/A
Ripley, IN	743	140	2,081	3,519	796	2.0	N/A
Scott, KY	627	260	3,629	6,041	481	2.0	N/A
Fayette, OH	883	309	2,136	2,100	310	1.9	N/A
Decatur, IN	922	154	2,525	3,876	1,538	1.8	N/A
Clinton, OH	788	375	2,490	2,572	329	1.8	N/A
Rush, IN	1,003	140	1,274	1,839	1,227	1.6	N/A

Highland, OH	687	242	1,756	2,089	373	1.6	N/A
Fayette, IN	561	150	1,426	2,609	387	1.4	N/A
Franklin, IN	491	92	1,335	1,634	664	1.3	N/A
Harrison, KY	354	290	1,786	1,158	303	1.1	N/A
Owen, KY	236	57	572	566	245	1.1	N/A
Switzerland, IN	257	251	1,554	776	364	1.0	N/A
Bracken, IN	174	52	570	479	134	0.7	N/A
Union, IN	343	58	548	705	266	0.6	N/A
Robertson, KY	74	12	112	107	65	0.3	N/A

Based on the analysis for this factor for Kentucky only, Boone, Carroll, and Mason Counties have significant emissions which could indicate a potential emissions contribution to the PM2.5 violations in the area. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 2: Air quality in potentially included versus excluded areas

The following table contains the design value for the MSA and adjacent counties that contain PM2.5 monitors. Design values followed by “a” indicate that the value is based on incomplete monitoring data. (MSA counties are in bold; Kentucky MSA counties in *bold italics*.)

County	2001-2003 design value
Hamilton, OH	17.8
Butler, OH	16.2
<i>Kenton, KY</i>	<i>15.0</i>
<i>Campbell, KY</i>	<i>14.5</i>
Montgomery, OH	15.2
Greene, OH	9.5a
Preble, OH	13.5a

Based on an analysis of this factor for Kentucky only, the Campbell and Kenton County monitors are attaining. The Kenton County monitor reading of 15.0 indicates that there may be a potential emissions contribution from the County to the area. This factor is not significant for the remaining Kentucky counties.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Cincinnati-Hamilton MSA and some adjacent counties with violating monitors and those with significant emissions. The total MSA 2002 population is 2,009,679. (MSA counties are in bold; Kentucky MSA counties in bold italics.)

County	2002 Population	Percent of Population of MSA	2002 Population Density
Hamilton, OH	833,721	41.49	2,048
Clermont, OH	183,352	9.12	406
Dearborn, IN	47,333	2.36	155

Butler, OH	340,543	16.95	729
<i>Boone, KY</i>	<i>93,290</i>	<i>4.64</i>	<i>379</i>
Warren, OH	175,133	8.71	438
<i>Kenton, KY</i>	<i>152,164</i>	<i>7.57</i>	<i>934</i>
<i>Campbell, KY</i>	<i>88,604</i>	<i>4.41</i>	<i>583</i>
Brown, OH	43,464	2.16	88
<i>Grant, KY</i>	<i>23,620</i>	<i>1.18</i>	<i>91</i>
<i>Pendleton, KY</i>	<i>14,815</i>	<i>0.74</i>	<i>53</i>
<i>Gallatin, KY</i>	<i>7,836</i>	<i>0.39</i>	<i>79</i>
Ohio, IN	5,804	0.29	67
Adams, OH	27,804		48
Montgomery, OH	554,470		1,200
Carroll, KY	10,223		79
Mason, KY	16,916		70

Based on the analysis for this factor, the populations for the Kentucky counties are much smaller than those in the Ohio Counties of Hamilton, Butler, and Montgomery. The Kentucky Counties of Boone, Kenton, and Campbell have population values of some significance as compared to the much smaller MSA Kentucky Counties of Grant, Gallatin, and Pendleton. This factor is not significant for the remaining Kentucky counties in this table.

Factor 4: Traffic and commuting patterns

Commuting Information

Total number of workers in Boone County, KY: 44,507

Commuters in Boone County, KY who work in Boone County, KY: 23,589 (53%)

Commuters from Boone County, KY to Hamilton County, OH: 8,351 (19%)

Commuters from Boone County, KY to Butler County, OH: 641 (1%)

Total number of workers in Kenton County, KY: 76,169

Commuters in Kenton County, KY who work in Kenton County, KY: 30,771 (40%)

Commuters from Kenton County, KY to Boone County, KY: 17,053 (22%)

Commuters from Kenton County, KY to Hamilton County, OH: 20,200 (27%)

Commuters from Kenton County, KY to Butler County, OH: 908 (1%)

Total number of workers in Campbell County, KY: 42,820

Commuters in Campbell County, KY who work in Campbell County, KY: 15,474 (36%)

Commuters from Campbell County, KY to Boone County, KY: 4,062 (9%)

Commuters from Campbell County, KY to Hamilton County, OH: 14,946 (35%)

Commuters from Campbell County, KY to Butler County, OH: 652 (2%)

Total number of workers in Gallatin County, KY: 3,589

Commuters in Gallatin County, KY who work in Gallatin County, KY: 1,317 (37%)

Commuters from Gallatin County, KY to Boone County, KY: 1,038 (29%)

Commuters from Gallatin County, KY to Hamilton County, OH: 196 (5%)

Total number of workers in Grant County, KY: 10,262

Commuters in Grant County, KY who work in Grant County, KY: 4,181 (41%)
 Commuters from Grant County, KY to Boone County, KY: 2,852 (28%)
 Commuters from Grant County, KY to Hamilton County, OH: 716 (7%)

Total number of workers in Pendleton County, KY: 6,467
 Commuters in Pendleton County, KY who work in Pendleton County, KY: 2,482 (38%)
 Commuters from Pendleton County, KY to Boone County, KY: 789 (12%)
 Commuters from Pendleton County, KY to Hamilton County, OH: 785 (12%)
 Commuters from Pendleton County, KY to Butler County, OH: 101 (2%)

Total number of workers in Carroll County, KY: 4,466
 Commuters in Carroll County, KY who work in Carroll County, KY: 3,475 (78%)
 Commuters from Carroll County, KY to Boone County, KY: 54 (1%)
 Commuters from Carroll County, KY to Hamilton County, OH: 48 (1%)

Total number of workers in Mason County, KY: 7,560
 Commuters in Boone County, KY who work in Boone County, KY: 5,978 (79%)
 Commuters from Mason County, KY to Hamilton County, OH: 95 (1%)

A notable number of commuters from Kenton and Campbell Counties commute into violating Hamilton County. Although these numbers are far less than the number of commuters in Hamilton County, in conjunction with VMT data analyzed below, they indicate some potential for contributing to the mobile source emissions in the area.

Although 47% of Boone's 44,507 workers commute into other counties in the MSA, a relatively small number commute into the violating counties. In Carroll County, 78% of the 4,466 workers commute within the County. Similarly, in Mason County, 79% of the 7,560 workers commute within the County. Thus, onroad mobile source emissions from commuting patterns for Boone, Carroll, and Mason Counties do not appear to be contributing to violations in the area. This factor is not significant for the remaining Kentucky counties listed above.

Vehicle Miles Traveled:

The following table has the vehicle miles traveled (thousand miles) for the counties in the Cincinnati-Hamilton MSA and some adjacent counties with significant emissions. (MSA counties are in bold; Kentucky MSA counties in *bold italics*.)

County	2002 VMT (thousand miles/year)
Hamilton, OH	8,420
Clermont, OH	1,649
Dearborn, IN	607
Butler, OH	2,610
<i>Boone, KY</i>	<i>842</i>
Warren, OH	1,354
<i>Kenton, KY</i>	<i>1,816</i>
<i>Campbell, KY</i>	<i>1,097</i>

Brown, OH	417
Grant, KY	379
<i>Pendleton, KY</i>	<i>169</i>
<i>Gallatin, KY</i>	<i>254</i>
Ohio, IN	56
Adams, OH	283
Montgomery, OH	5,668
Carroll, KY	213
Mason, KY	178

Based on an analysis of this factor for Kentucky only, the VMT for Boone, Kenton, and Campbell Counties are in the relatively moderate to high range as compared to the counties listed above, with the exception of the the violating Ohio counties of Hamilton, Butler, and Montgomery. Boone, Kenton, and Campbell VMT data indicate some potential to contribute to the PM2.5 violations in the area. VMT values for Carroll and Mason are very low and do not indicate a potential contribution. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 5: Expected growth

The following table has the population and population growth figures for the Cincinnati-Hamilton MSA and some adjacent counties with significant emissions. (MSA counties are in bold; Kentucky MSA counties in *bold italics*.)

County	2002 Population	growth (90-00)	% growth (90-00)
Hamilton, OH	833,721	-20,925	-2
Clermont, OH	183,352	27,790	19
Dearborn, IN	47,333	7,274	19
Butler, OH	340,543	41,328	14
<i>Boone, KY</i>	<i>93,290</i>	<i>28,402</i>	<i>49</i>
Warren, OH	175,133	44,474	39
<i>Kenton, KY</i>	<i>152,164</i>	<i>9,433</i>	<i>7</i>
<i>Campbell, KY</i>	<i>88,604</i>	<i>4,750</i>	<i>6</i>
Brown, OH	43,464	7,319	21
<i>Grant, KY</i>	<i>23,620</i>	<i>6,647</i>	<i>42</i>
<i>Pendleton, KY</i>	<i>14,815</i>	<i>2,354</i>	<i>20</i>
<i>Gallatin, KY</i>	<i>7,836</i>	<i>2,477</i>	<i>46</i>
Ohio, IN	5,804	308	6
Adams, OH	27,804	1,959	8
Montgomery, OH	554,470	-14,747	-3
Carroll, KY	10,223	863	9
Mason, KY	16,916	134	1

While the Kentucky Counties of Boone, Grant, and Gallatin have the highest population growth rates from 1990-2000 than all of the counties in the MSA, only Boone County's resulting population increase of 28,402, (third highest increase in the MSA), is significant enough to indicate a potential to contribute to violations in the area. The population growth rates of Carroll and Mason Counties are relatively very low and thus, do not indicate a potential to contribute to

the area's violations. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 6: Meteorology

The following meteorological information was provided by Kentucky for the MSA Kentucky Counties of Boone, Campbell, Kenton, Gallatin, Pendleton, and Grant. (The figure referenced is a wind rose for April 1-October 31 for the 1988-1992 period that is provided in Kentucky's PM2.5 recommendations submittal.)

Meteorological Information

"Due to the close proximity of Cincinnati, Ohio, meteorological data from Cincinnati was used for this Kentucky area. Wind speed/wind direction information shows that the majority of the time for the period 1988–1992, the wind in the...County area came from the southwest and typically from 7- 10 knots. (See figure 1-A) The mean high temperature for July for the area from 1961 through 1990 was 86° F, the mean low was 66° F. The mean precipitation for the same period was 3.8 inches." (*Source: Kentucky PM2.5 submittal*)

Based on an analysis of this factor, the information provided is not sufficient to provide a compelling argument to exclude counties based on prevailing winds. This information was provided only for the summertime winds.

Factor 7: Geography/topography

Based on an analysis of this factor, there are no significant topographical issues associated with this MSA. For the adjacent Carroll and Mason Counties in Kentucky with significant emissions, both counties are two counties removed from the nearest county with a violating monitor (Hamilton, Ohio), with attaining monitors in between in Kenton and Campbell Counties in Kentucky.

Factor 8: Jurisdictional boundaries

The following MSA counties were designated nonattainment for the 8-hour ozone standard on April 15, 2004: the Kentucky Counties of Boone, Campbell, and Kenton; the Indiana County of Dearborn; and the Ohio Counties of Hamilton, Clermont, Butler, Warren, Montgomery, Greene, Clinton. This factor did not play a significant role in the decision-making process.

Factor 9: Level of control of emission sources

The following information was provided by Kentucky for Boone, Campbell, Kenton, Grant, Gallatin and Pendleton Counties.

"Point sources located within...County are subject to PSD requirements, CTG RACT requirements, Maximum Achievable Control Technology (MACT) requirements for sources of Hazardous Air Pollutants, and New Source Performance Standards (NSPS). Any controls imposed as a result of previous nonattainment designations are required to remain in...County."

For Boone County only:

“Additionally, substantial NOx reductions have occurred during the last year from East Bend Power Plant which would further lower the contribution of NOx emissions from Boone County.”

This factor did not play a significant role in the decision-making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

No Changes Made to June 29, 2004, Recommendations.

Boone County, KY:

Boone County contains one major point source, the Cinergy East Bend (Cincinnati Gas & Electric) power plant. Kentucky provided the following information on controls at this facility: scrubber with 85% control efficiency; ESP with > 99% control efficiency; and low NOx burners and SCR with annual efficiency 69%. NOx controls have been in place since 2002. The NOx SCR controls are seasonal. The installation of SCR in 2002 gained 2,534 tpy of NOx reductions.

Corrections to TSD for Cincinnati-Hamilton MSA:

6.4.3.1- Factor 1:

The following corrections are made to the third paragraph in this section as follows:

Insert redlined phrase: “...and both counties were previously designated part of the Cincinnati 1-hour ozone nonattainment area...”

Add an “s” to: “...very low populations relative to the area...”

6.4.3.1 - Factor 2:

The 2001-2003 design values in the Factor 2 table for Campbell and Kenton Counties are corrected to read as follows:

County	2001-2003 design value
<i>Kenton, KY</i>	<i>14.9</i>
<i>Campbell, KY</i>	<i>13.9</i>

6.4.3.1- Factor 4:

The following correction is made to the section, “Commuting Information,” for Mason County:

Replace “Boone” with “Mason” as noted: “Commuters in Mason ~~Boone~~ County, KY who work in Mason ~~Boone~~ County, KY...”

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Cincinnati–Hamilton, OH-KY-IN area: Boone, Campbell, and Kenton.

6.4.3.2 Louisville Area

The Louisville MSA contains the Kentucky Counties of Jefferson, Bullitt, and Oldham; and the Indiana Counties of Floyd, Clark, Harrison, and Scott. Jefferson County, Kentucky and Clark County, Indiana are violating the PM_{2.5} standard. The adjacent Kentucky County of Carroll has relatively high emissions for the area, however, it was evaluated as part of the Cincinnati area.

In February 2004, Kentucky recommended that Jefferson County be designated nonattainment and that Bullitt and Oldham Counties be designated attainment for the PM_{2.5} standard for the Louisville MSA.

EPA agrees that the Kentucky MSA County of Oldham be designated attainment/unclassifiable due to low emissions and relatively low population. EPA agrees that Jefferson County be designated nonattainment due to four violating monitors in the County and is modifying Kentucky’s recommendation to include Bullitt County in the Louisville nonattainment area due to a relatively high number of commuters into violating Jefferson County, a monitored PM_{2.5} value of 15.0 that is very close to the standard, and relatively high population growth.

EPA agrees that the adjacent counties should be designated as attainment/unclassifiable due to low population growth, a low percentage of workers commuting into the Louisville MSA, relatively low emissions, and large distance from the violating monitors in the area.

Area	EPA Recommendation for KY	State Recommendation
Louisville, KY	Full counties: Jefferson County Bullitt County	Full counties: Jefferson

The following is a brief summary of the nine criteria for the Louisville, KY area. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted emissions scores for the counties in the Louisville MSA and surrounding counties. (MSA counties are in **bold**; Kentucky MSA counties in ***bold italics***.)

County	PM	SO _x	NO _x	VOC	Amm	Score	Cum. Score
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Jefferson, KY	7,385	62,526	81,398	55,376	1,539	51.5	51.5
Floyd, IN	3,826	47,796	10,282	4,789	346	16.4	67.9
Clark, IN	1,612	484	4,960	7,125	498	12.2	80.1
Bullitt, KY	829	343	3,463	5,817	210	7.3	87.4
Harrison, IN	794	419	3,677	2,702	2,632	5.3	92.7
Oldham, KY	770	529	3,707	2,168	224	4.7	97.4
Scott, IN	397	100	1,515	2,426	318	2.6	100.0
Carroll, KY	3,547	53,086	26,269	3,249	159	15.2	
Jefferson, IN	2,247	39,599	33,990	2,921	302	11.2	
Hardin, KY	1,207	1,774	7,695	6,713	1,114	9.1	
Lawrence, IN	1,544	4,330	5,707	3,330	543	6.5	
Jackson, IN	919	260	3,427	4,721	898	5.8	
Nelson, KY	781	497	2,134	7,923	1,147	5.0	
Trimble, KY	869	7,998	8,458	520	182	4.6	
Breckinridge, KY	566	321	2,592	1,273	757	4.4	
Grayson, KY	593	412	1,532	1,796	1,166	4.0	
Meade, KY	692	661	4,551	2,272	556	4.0	
Shelby, KY	699	397	2,906	2,778	842	4.0	
Franklin, KY	506	601	3,059	4,396	217	3.8	
Jennings, IN	640	233	1,589	2,274	256	3.5	
Perry, IN	518	789	3,102	2,018	403	3.4	
Hart, KY	391	162	1,839	1,499	662	3.2	
Washington, IN	580	136	1,452	2,448	3,468	3.1	
Taylor, KY	408	632	3,642	1,609	461	3.1	
Crawford, IN	319	536	3,842	1,237	192	2.9	
Orange, IN	475	86	2,017	2,599	313	2.9	
Anderson, KY	335	443	1,535	2,648	164	2.5	
Marion, KY	381	143	801	1,400	775	2.5	
Henry, KY	424	156	1,465	1,246	420	2.1	
Owen, KY	236	57	572	566	245	2.1	
Larue, KY	294	186	768	646	573	1.8	
Washington, KY	273	115	618	1,051	584	1.8	
Green, KY	261	104	507	586	331	1.7	
Spencer, KY	281	31	393	574	221	1.7	

Based on the analysis for this factor for Kentucky only, the Kentucky Counties of Jefferson and Carroll have significant emissions. Bullitt County has emissions with a potential to contribute to the PM2.5 violations in the area. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 design value
<i>Jefferson, KY</i>	<i>16.9</i>
Floyd, IN	14.9
Clark, IN	16.2
<i>Bullitt, KY</i>	<i>15.0</i>
Franklin, KY	13.6
Hardin, KY	14.1

There are four counties in the MSA with PM2.5 monitors, two of which have violating design values (Jefferson County, Kentucky and Clark, Indiana). Bullitt County, Kentucky has an attaining monitor whose design value is close to the standard (15.0), which indicates that there is a potential to contribute to the PM2.5 violations in area. The adjacent Kentucky Counties of Hardin and Franklin are monitoring attainment and thus, do not indicate emissions contributions. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Louisville MSA and adjacent counties with significant emissions. The total MSA 2002 population is 1,039,599. (MSA counties are in **bold**; Kentucky MSA counties are in *bold italics*.)

County	2002 Population	% of MSA Population (%)	Population Density
<i>Jefferson, KY</i>	<i>698,080</i>	<i>67.15</i>	<i>1,813</i>
Floyd, IN	71,633	6.89	484
Clark, IN	98,198	9.45	262
<i>Bullitt, KY</i>	<i>63,800</i>	<i>6.14</i>	<i>213</i>
Harrison, IN	35,244	3.39	73
<i>Oldham, KY</i>	<i>49,310</i>	<i>4.74</i>	<i>261</i>
Scott, IN	23,334	2.24	123
Hardin, KY	95,724	N/A	152

Based on the analysis for this factor for Kentucky only, Jefferson County's population of 698,080 is approximately 6-30 times higher than all the other MSA counties. Hardin County's population is the third largest of the counties analyzed, however, it is still relatively insignificant in comparison to Jefferson County's population. Thus, this factor is not significant for the Kentucky counties listed in this table with the exception of Jefferson County.

Factor 4: Traffic and commuting patterns

Commuting Information:

Total number of workers in Jefferson County, KY: 329,091

Commuters in Jefferson County, KY who work in Jefferson County, KY: 303,624 (92%)

Commuters from Jefferson County, KY to Clark County, IN: 7,047 (2%)

Total number of workers in Bullitt County, KY: 30,648
 Commuters in Bullitt County, KY who work in Bullitt County, KY: 8,419 (27%)
 Commuters from Bullitt County, KY to Jefferson County, KY: 19,730 (64%)
 Commuters from Bullitt County, KY to Clark County, IN: 418 (1%)

Total number of workers in Oldham County, KY: 27,716
 Commuters in Oldham County, KY who work in Oldham County, KY: 7,207 (33%)
 Commuters from Oldham County, KY to Jefferson County, KY: 12,684 (58%)
 Commuters from Oldham County, KY to Clark County, IN: 326 (1%)

Total number of workers in Hardin County, KY: 44,815
 Commuters in Hardin County, KY who work in Hardin County, KY: 36,030 (80%)
 Commuters from Hardin County, KY to Jefferson County, KY: 5,347 (12%)

Based on the commuting data for the Kentucky counties listed above, there appears to be potentially significant on-road mobile source emissions contributions from Bullitt and Oldham to Jefferson County, which has over 300,000 resident commuters. A large percent (78%-80%) of the workers in Carroll and Hardin Counties, respectively, commute within their resident counties. Thus, with the exception of Bullitt, Jefferson, and Oldham Counties, this factor is not significant for the remaining Kentucky counties listed above.

Vehicle Miles Traveled (VMT):

The following table has the vehicle miles traveled (thousand miles) for the counties in the Louisville MSA and the adjacent county of Hardin due to its relatively high VMT and population. (MSA counties are in bold; Kentucky MSA counties are in *bold italics*.)

County	2002 VMT (thousand miles/year)
<i>Jefferson, KY</i>	<i>7,149</i>
<i>Floyd, IN</i>	<i>843</i>
<i>Clark, IN</i>	<i>1,262</i>
<i>Bullitt, KY</i>	<i>849</i>
<i>Harrison, IN</i>	<i>528</i>
<i>Oldham, KY</i>	<i>507</i>
<i>Scott, IN</i>	<i>364</i>
Hardin, KY	1,333

Based on the analysis for this factor, the VMT for Jefferson County far exceeds the VMT of the MSA and surrounding counties. Although Hardin County has a relatively high VMT, 80% of its workers commute within the County, with an additional 12% commuting into Jefferson County, Kentucky. Based on the analysis for this factor, Hardin County does not appear to significantly contribute on-road mobile source emissions to Jefferson County. Thus, with the exception of Jefferson County, this factor is not significant for the remaining Kentucky counties listed in this table.

Factor 5: Expected growth

The following table has the population and population growth figures for the Louisville MSA and the adjacent Hardin County due to its relatively high VMT and population. (MSA counties are in **bold**; Kentucky MSA counties are in **bold italics**.)

County	2002 Population	growth (90-00)	% growth (90-00)
<i>Jefferson, KY</i>	<i>698,080</i>	<i>28,667</i>	<i>4</i>
Floyd, IN	71,633	6,419	10
Clark, IN	98,198	8,695	10
<i>Bullitt, KY</i>	<i>63,800</i>	<i>13,669</i>	<i>29</i>
Harrison, IN	35,244	4,435	15
<i>Oldham, KY</i>	<i>49,310</i>	<i>12,915</i>	<i>39</i>
Scott, IN	23,334	1,969	9
Hardin, KY	95,724	4,934	6

Based on the analysis for this factor for Kentucky only, the population growth in Bullitt and Oldham Counties indicate that these counties may contribute to the PM2.5 issues in Jefferson County. Although Jefferson County's growth rate is fairly low, the magnitude of its population increase is the highest in the MSA and is approximately twice that of the increases in Bullitt and Oldham. Although Hardin County's population is the third largest of the counties analyzed above, its population growth is relatively low. Thus, with the exception of Bullitt, Jefferson, and Oldham Counties, this factor is not significant for the remaining Kentucky counties listed in this table.

Factor 6: Meteorology

The following meteorological information was provided by Kentucky for Jefferson, Bullitt, and Oldham.

Wind speed/wind direction information shows that the majority of the time for the period 1988–1992, the wind in the...County area came from the south southwest and typically at 7-10 knots. The mean high temperature for July for the area from 1961 through 1990 was 87° F and the mean low was 70° F. The mean precipitation for the same period was 4.3 inches.

The information provided is not sufficient to provide a compelling argument to exclude counties based on prevailing winds. The information provided was based only on summertime winds.

Factor 7: Geography/topography

Based on an analysis of this factor, there are no significant geographical or topographical issues associated with this MSA boundary.

Factor 8: Jurisdictional boundaries

The following MSA counties were designated nonattainment for the 8-hour ozone standard on April 15, 2004: the Kentucky Counties of Jefferson, Bullitt, and Oldham; and the Indiana Counties of Floyd, Clark, and Jackson. This factor did not play a significant role in the decision-making process for these counties.

Factor 9: Level of control of emission sources

The following information was provided by Kentucky for Bullitt, Oldham, and Jefferson Counties: “Point sources located within...County are subject to Prevention of Significant Deterioration (PSD) requirements, Control Technology Guidelines Reasonable Available Control Technology (CTG RACT) requirements, Maximum Achievable Control Technology (MACT) requirements for sources of Hazardous Air Pollutants (HAP), and New Source Performance Standards (NSPS).” This factor did not play a significant role in the decision-making process for these counties.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

No Changes Made to June 29, 2004, Recommendations.

Corrections to TSD for Louisville MSA:

6.4.3.1- Factor 2:

The 2001-2003 design value in the Factor 2 table for Bullitt County is corrected to read as follows:

<i>Bullitt, KY</i>	<i>14.9</i>
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Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Louisville, KY-IN area: Bullitt and Jefferson.

6.4.3.3 Lexington Area

The Lexington MSA contains the Counties of Fayette, Bourbon, Clark, Jessamine, Madison, Scott, and Woodford. Fayette County is violating the PM_{2.5} standard.

In February 2004, Kentucky recommended that Fayette County be designated attainment for the PM_{2.5} standard for the Lexington, KY MSA, and the remaining MSA counties be designated attainment. EPA agrees that Fayette County should be designated nonattainment for PM_{2.5} due to a violating monitor (South Limestone). EPA is modifying Kentucky’s recommendation to

include the MSA counties of Clark, Madison and Woodford and the adjacent county of Mercer in the Lexington nonattainment area. Clark and Madison Counties are included significant emissions. Madison County also has relatively high population and population growth, and relatively high VMT. Woodford County as nonattainment due to the level of emissions. We have included in our recommended nonattainment area Mercer County that is adjacent to the Lexington MSA with a violating monitor, that is generally rural in character, and that contains an identifiable large emitting facility (e.g., power plants) which we believe contributes to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such a large facility, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility, should be designated nonattainment. EPA agrees that the remaining MSA Counties of Bourbon, Jessamine, and Scott in Kentucky be designated attainment/unclassifiable due to their relatively low emissions, low populations, low VMT, low numbers of commuters into the violating counties, and small point sources.

EPA agrees that the adjacent county of Pulaski should be designated attainment/classifiable for the PM_{2.5} standard, although it has significant emissions due to a power plant. This county has relatively low population, low population growth, and low VMT. Further, the commuting patterns and distance from the violating monitors indicate that this county does not contribute to the violations in the area. The other adjacent counties do not contribute and therefore, will be designated as attainment/unclassifiable.

The recommendations of EPA and Kentucky are summarized in the table below.

Area	EPA Recommendation	State Recommendation
Lexington, KY	Full counties: Fayette County Clark County Madison County Mercer County Woodford County	Full counties: Fayette Drop: Bourbon, Clark, Madison, Jessamine, Woodford and Scott Counties

The following is a brief summary of the nine criteria for the Lexington, KY area. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and Weighted Emissions Scores for the counties in the Lexington MSA and surrounding counties. (MSA counties in Kentucky are in **bold**.)

County	PM	SO _x	NO _x	VOC	Amm	Score	Cum. Score
Fayette (KY)	1703	3925	13620	15720	606	31.4	31.4
Clark (KY)	1132	9647	6622	2374	398	25.7	57.1

Madison (KY)	867	1189	5512	4215	641	13.6	70.7
Woodford (KY)	559	2663	3530	2852	427	9.5	80.2
Scott (KY)	627	260	3629	6041	481	7.9	88.1
Jessamine (KY)	504	323	2189	2436	242	7.6	95.7
Bourbon (KY)	444	147	1424	1352	597	4.3	100.0
Mercer (KY)	3136	49269	9145	1686	409	83.8	N/A
Pulaski (KY)	2403	25156	10996	3901	877	56.8	N/A
Laurel (KY)	770	1044	4564	3823	439	14.6	N/A
Nelson (KY)	781	497	2134	7923	1147	10.3	N/A

Based on the analysis for this factor, the following counties appear to have significant emissions (over 10,000 tons per year of any pollutant): Fayette, Mercer and Pulaski. Clark, Madison, and Woodford also have significant level of emissions. Although Pulaski County This factor did not appear significant for the remaining counties listed in this table.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 design value
Fayette (KY)	15.7
Madison (KY)	13.5
Laurel (KY)	12.6

Based on the analysis for this factor, only Fayette County's South Limestone monitoring data exceeds the standard. The Newtown Pike monitor, also in Fayette County, is attaining at 14.9. Madison County and the adjacent county of Laurel have monitors with readings well below the standard. This factor is not significant for the remaining counties listed in the area.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Lexington MSA and adjacent counties with significant emissions. The total MSA 2002 population is 489,717. (MSA counties are in **bold**.)

County	2002 Population	Percent of Total MSA Population	Population Density
Fayette (KY)	263,618	53.83	925
Clark (KY)	33,726	6.89	133
Madison (KY)	73,334	14.97	166
Woodford (KY)	23,403	4.78	123
Scott (KY)	35,320	7.21	124
Jessamine (KY)	40,740	8.32	235
Bourbon (KY)	19,576	4.0	67
Mercer (KY)	21,047		84
Laurel (KY)	54,313		125
Nelson (KY)	38,823		92

Fayette County's population is roughly 3-11 times higher than the other counties listed. Madison County has the second highest of the MSA counties and surrounding counties with significant

weighted emissions scores. Based on an analysis of this factor, no other Kentucky counties, with the exception of Madison County, have populations significant to indicate a potential contribution to the PM2.5 violations in Fayette County.

Factor 4: Traffic and commuting patterns

Commuting Information

Total number of workers in Fayette County, KY: 136,793
Commuters in Fayette County, KY who work in Fayette County, KY: 117,584 (86%)

Total number of workers in Bourbon County, KY: 9,103
Commuters in Bourbon County, KY who work in Bourbon County, KY: 4,764 (52%)
Commuters from Bourbon County, KY to Fayette County, KY: 2,600 (29%)

Total number of workers in Clark County, KY: 15,487
Commuters in Clark County, KY who work in Clark County, KY: 8,492 (55%)
Commuters from Clark County, KY to Fayette County, KY: 4,777 (31%)

Total number of workers in Jessamine County, KY: 18,885
Commuters in Jessamine County, KY who work in Jessamine County, KY: 8,721 (46%)
Commuters from Jessamine County, KY to Fayette County, KY: 8,748 (46%)

Total number of workers in Madison County, KY: 34,494
Commuters in Madison County, KY who work in Madison County, KY: 24,061 (70%)
Commuters from Madison County, KY to Fayette County, KY: 6,870 (20%)

Total number of workers in Scott County, KY: 16,536
Commuters in Scott County, KY who work in Scott County, KY: 10,148 (61%)
Commuters from Scott County, KY to Fayette County, KY: 4,287 (26%)

Total number of workers in Woodford County, KY: 12,377
Commuters in Woodford County, KY who work in Woodford County, KY: 5,591 (45%)
Commuters from Woodford County, KY to Fayette County, KY: 4,308 (35%)

Total number of workers in Laurel County, KY: 21,180
Commuters in Laurel County, KY who work in Laurel County, KY: 16,286 (77%)

Total number of workers in Mercer County, KY: 9,610
Commuters in Mercer County, KY who work in Mercer County, KY: 5,235 (54%)
Commuters from Mercer County, KY to Fayette County, KY: 1,319 (14%)

Total number of workers in Nelson County, KY: 17,594
Commuters in Nelson County, KY who work in Nelson County, KY: 11,189 (64%)

Madison County has the largest number of workers commuting into Fayette County (6,870 commuters), which is relatively insignificant for such a large county as Fayette. Laurel and Nelson County workers do not commute into the Lexington MSA at all. Based on the analysis for this factor, there are no counties with commuting data showing a potential to contribute to the PM2.5 violations in Fayette County.

Vehicle Miles Traveled:

The following table has the vehicle miles traveled (thousand miles) for the counties in the Lexington MSA and adjacent counties with significant emissions. (Kentucky MSA counties are in **bold**.)

County	2002 VMT
Fayette (KY)	2764
Clark (KY)	523
Madison (KY)	944
Woodford (KY)	311
Scott (KY)	645
Jessamine (KY)	362
Bourbon (KY)	204
Mercer (KY)	224
Laurel (KY)	852
Nelson (KY)	427

Fayette County's VMT is substantially higher than the other MSA counties. Although Madison and Laurel Counties have the second and third highest VMT of the counties analyzed, commuting data do not indicate significant (or any) contributions to Fayette County. Further, Laurel County is a significant distance from Fayette County and does not contribute to Fayette County through its commuting patterns. Based on the analysis for this factor, no other Kentucky counties, with the exception of Madison County, have VMT and commuting data with a potential to contribute to the PM2.5 violations in Fayette County.

Factor 5: Expected growth

The following table has the population and population growth figures for the Lexington MSA and adjacent counties with significant emissions. (MSA counties are in **bold**.)

County	2002 Population	growth (90-00)	% growth (90-00)
Fayette (KY)	263618	35,146	16
Clark (KY)	33726	3,648	12
Madison (KY)	73334	13,364	23
Woodford (KY)	23403	3,253	16
Scott (KY)	35320	9,194	39
Jessamine (KY)	40740	8,533	28
Bourbon (KY)	19576	124	1
Mercer (KY)	21047	1,669	9

Laurel (KY)	54313	9,277	21
Nelson (KY)	38823	7,767	26

Fayette County's population is substantially higher than the MSA counties and adjacent counties with significant weighted emissions scores, and grew the most during the 1990-2000 time period. Madison County is the third fastest growing county in the MSA based on a percent growth rate with the second largest population and the second largest population increase. Thus, Madison County's population growth is significant enough to contribute to PM2.5 violations in Fayette County. None of the other MSA and adjacent counties listed above have population characteristics which appear to be contributing to the PM2.5 violations in Fayette County.

Factor 6: Meteorology

The following meteorological information was provided by Kentucky. The figure referenced is a wind rose for April 1-October 31 for the 1988-1992 period that is provided in Kentucky's PM2.5 recommendations submittal. The text below is the same for Fayette, Bourbon, Clark, Jessamine, Scott, and Woodford Counties.

“Wind speed/wind direction information shows that the majority of the time for the period 1988–1992, the wind in the...County area came from the southwest and typically from 7-10 knots. (See figure 1-A) The mean high temperature for July for the area from 1961 through 1990 was 86° F and the mean low was 66° F. The mean precipitation for the same period was 4.8 inches.” (*Source: KY submittal*)

For Madison County, the following statement preceded the excerpted paragraph above:

Due to the close proximity of Lexington, Kentucky, meteorological data from Lexington was used for the Madison county area.”

This factor did not play a significant role in the decision making process. The submitted information was only for the summertime winds.

Factor 7: Geography/topography

Based on an analysis of this factor, there are no significant topographical issues associated with this MSA.

Factor 8: Jurisdictional boundaries

No county in the Lexington MSA was designated nonattainment for the 8-hour ozone standard on April 15, 2004. This factor did not play a significant role in the decision making process.

Factor 9: Level of control of emission sources

The following information was provided by Kentucky for Fayette, Bourbon, Clark, Jessamine, Madison, Scott, Woodford Counties.

“Point sources located within...County are subject to PSD requirements, CTG RACT requirements, Maximum Achievable Control Technology (MACT) requirements for sources of Hazardous Air Pollutants, and New Source Performance Standards (NSPS).” (Source: KY PM2.5 submittal)

This factor did not play a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA’s initial nonattainment recommendations on June 29, 2004, include the MSA counties of Clark, Madison, and Woodford and the adjacent county of Mercer. Upon further review of additional information provided by Kentucky, EPA is revising its recommendations and designating Clark, Madison, and Woodford Counties as attainment/unclassifiable. EPA is designating a portion of Mercer County as nonattainment and the remainder of the county as attainment/unclassifiable.

The additional analysis provided by Kentucky indicated that there is a strong localized effect on the violating monitor in Fayette County. Fayette County has two monitors located in Lexington, Kentucky which are 1.9 miles apart, with one violating at a design value of 15.6 and one attaining at a design value of 14.9. The supplemental submittals from Kentucky provided additional data and analysis to demonstrate that the monitor located on the University of Kentucky’s (UK) campus is violating due to localized impacts. These local impacts include: emissions from 112 UK boilers fueled by coal and natural gas; 13 major construction projects on the UK campus which began as early as December 1999 and have just been completed or are in process; and several, nearby downtown construction projects in Lexington. All of the construction projects in the area are one to six blocks from the violating monitor.

Clark County, KY:

Clark County’s population of 33,726 people and VMT of 523,000 are very small in comparison to those of Fayette County, whose population, commuters, and VMT are substantially higher than those of the other MSA counties. In contrast, Fayette County, with one violating monitor, has a population of 263,618 and VMT of 2,764,000. Clark County has no monitor. Clark County’s population comprises only 6.9% of the total MSA population. In addition, Clark County has a low number of workers (4,777) commuting to the violating MSA County of Fayette and whose 15,487 workers account for just 6.4% of the total number of MSA workers.

Clark County’s total emissions are, in tpy (and % of the MSA emissions): 1,132 PM (19.4%), 9,647 SO₂ (53.1%), 6,622 NO_x (18.1%), and 2,374 VOC (6.8%). Clark County does contain a small outlying power plant, East Kentucky Power, with 2001 emissions of 6,846 tpy of SO₂ and

1,910 tpy of NO_x. These factors in combination with Kentucky's localized impact analysis indicate Clark County's emissions are not contributing to the PM_{2.5} violation at the one monitor in Fayette County.

Madison County, KY:

Madison County has no large point sources and the design value of its attaining monitor is 13.4. The County has a relatively small population of 73,334 and a low number of VMT of 944,000 in comparison to Fayette, the violating county, whose population is 263,618 and VMT is 2,764,000. Madison County workers account for only 14.2% of the total number of commuters in the MSA. In addition, 70% of the County's workers commute within Madison County.

Woodford County, KY:

Woodford County has relatively low emissions and no monitor. Specifically, County emission totals are, in tpy (and % of the MSA emissions): 559 tpy PM (9.6%), 2,663 tpy SO₂ (14.7%), 3,530 tpy NO_x (9.7%), and 2,852 tpy VOC (8.2%). While there is a small Kentucky Utilities power plant, the highest emissions from this plant are only 1,117 tpy NO_x and 2,087 tpy SO₂. In addition, the County has a very small population of 23,403 and accounts for only 5.1% of all the commuters in the MSA. Only 5,020 workers from Woodford County commute to other counties in the MSA. These factors in combination with Kentucky's localized impact analysis indicate Woodford County's emissions are not contributing to the PM_{2.5} violation at the one monitor in Fayette County.

Mercer County, KY:

In the June 29, 2004, letters from EPA to the States responding to their designation recommendations, EPA recommended the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant to include it in the nonattainment area. Mercer County is one of those counties.

Mercer County has low population (21,047 compared to 263,618 in Fayette County where the city of Lexington is located), low population density (84 people per square mile compared to 925 in Fayette County), low VMT (224,000 compared to 2,764,000 in Fayette County), and the only large point source is Kentucky Utilities' E.W. Brown facility. Mercer County has no monitor.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small "free-standing" boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped "land connector" extending from the main part of the nonattainment area to the power plant. The

Commonwealth of Kentucky subsequently submitted a partial county recommendation that included the E.W. Brown facility.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifier (StateFIPs-CoFIPs-Tract#-Block Group#) 21-167-9605-1 portion of Mercer County as part of the Lexington nonattainment area.

Corrections to TSD for Lexington MSA:

6.4.3.3 - Preamble:

The following corrections are noted to the preamble to the factors text above:

“In February 2004, Kentucky recommended that Fayette County be designated ~~attainment~~ nonattainment ...”

“Clark and Madison Counties are included due to significant emissions...”

“Woodford County is recommended as nonattainment...”

6.4.3.3 - Factor 1

The following corrections are noted to the text after the emissions table:

“...have significant levels of emissions. ~~Although Pulaski County~~ This factor...”

6.4.3.3 - Factor 2

The following correction is noted to the text after the design value table:

“...South ~~Limestone~~ Limestone monitoring...”

6.4.3.3 - Factor 2

The 2001-2003 design values in the Factor 2 table for Fayette and Madison Counties are corrected to read as follows:

County	2001-2003 design value
Fayette (KY)	15.6
Madison (KY)	13.4

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Lexington, KY area: Fayette and Mercer (Partial).

6.4.3.4 Huntington-Ashland Area

The Huntington-Ashland MSA contains the Kentucky Counties of Boyd, Carter, and Greenup; the West Virginia Counties of Cabell and Wayne; and Lawrence County, Ohio.

The following MSA and adjacent counties are violating the PM_{2.5} standard: Cabell County, West Virginia (MSA) and Lawrence (MSA) and Scioto (adjacent) Counties, Ohio.

In February 2004, Kentucky recommended that the PM_{2.5} designation for Boyd County be deferred and that Greenup and Carter Counties be designated attainment for the Huntington-Ashland MSA. EPA is modifying Kentucky's recommendation to include Boyd County and Lawrence Counties in Kentucky in the Huntington-Ashland nonattainment area. The following factors played a significant role in this decision for Boyd County: attaining monitor reading of 15.0, at the standard; significant SO_x, NO_x, and PM emissions; proximity to the violating MSA counties; controls with anticipated, substantial SO_x, NO_x, and PM emission reductions will not be implemented until the end of 2005, well after designations are made. Lawrence County, Kentucky is included due to significant emissions of SO_x and NO_x from a power plant and its close proximity to the violating counties in the MSA. We have included in our recommended nonattainment area this County that is adjacent to the Huntington-Ashland MSA with a violating monitor, that is generally rural in character, and that contains an identifiable large emitting facility (e.g., power plant) which we believe contributes to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such a large facility, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility, should be designated nonattainment.

EPA agrees that Greenup and Carter Counties in Kentucky should be designated attainment/unclassifiable due to their relatively low emissions, low populations, low VMT, low numbers of commuters into the violating counties, and small point sources.

The recommendations of EPA and Kentucky are summarized in the table below.

Area	EPA Recommendation for KY	State Recommendation
Huntington-Ashland, WV-KY-OH	Full counties: Boyd County Lawrence County (adjacent)	Full counties: Boyd (Defer Designation)

The following is a brief summary of the nine criteria for the Kentucky portion of the Huntington-Ashland, WV-KY-OH area. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons per year and weighted emissions scores for the counties in the Huntington-Ashland MSA and surrounding counties. (MSA counties are in **bold**; Kentucky MSA counties are in ***bold italics***.)

County	PM	SO _x	NO _x	VOC	Amm	Score	Cum. Score
Cabell (WV)	2,365	5,155	27,903	7,080	181	40.3	40.3
<i>Boyd (KY)</i>	<i>2,314</i>	<i>11,740</i>	<i>13,478</i>	<i>8,620</i>	<i>467</i>	<i>25.2</i>	<i>65.5</i>
Wayne (WV)	550	1,023	6,485	2,620	56	9.6	75.1
<i>Greenup (KY)</i>	<i>477</i>	<i>2,519</i>	<i>4,336</i>	<i>1,795</i>	<i>156</i>	<i>9.5</i>	<i>84.6</i>
Lawrence (OH)	770	841	4,399	4,366	207	8.6	93.2
<i>Carter (KY)</i>	<i>506</i>	<i>237</i>	<i>2,615</i>	<i>1,996</i>	<i>223</i>	<i>6.8</i>	<i>100.0</i>
Gallia (OH)	10,010	164,984	61,079	1,839	300	141.4	
Adams (OH)	6,417	125,136	52,992	1,508	431	102.4	
Putnam (WV)	4,395	80,150	39,795	3,752	97	72.7	
Mason (WV)	3,610	70,053	31,327	2,831	264	60.0	
Lawrence (KY)	2,903	56,066	21,265	919	56	48.3	
Scioto (OH)	1,053	2,790	5,566	4,703	350	12.5	
Lewis (KY)	429	469	2,873	990	222	8.1	
Pike (OH)	425	4,203	2,081	1,311	149	6.8	
Rowan KY	336	313	1,691	1,535	91	5.7	
Mingo (WV)	437	281	2,842	1,379	150	5.5	
Jackson (OH)	404	461	1,320	1,717	165	4.7	
Martin (KY)	281	661	1,236	706	762	4.0	
Lincoln (WV)	259	67	1,314	1,128	37	4.0	
Elliott (KY)	164	115	393	313	42	3.1	

Based on the analysis for this factor, the following Kentucky counties appear to have significant emissions (over 10,000 tons per year of any pollutant): Boyd and Lawrence. This factor is not significant for the remaining Kentucky counties listed in this table.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 design value
Cabell (WV)	16.6
<i>Boyd (KY)</i>	<i>15.0</i>
<i>Lawrence (OH)</i>	<i>15.8</i>
<i>Carter (KY)</i>	<i>12.2</i>
Scioto (OH)	17.2

There are four monitors in the MSA, with two of them in the Kentucky Counties of Boyd and Carter. The Kentucky monitors are monitoring attainment. Three monitors in the MSA and surrounding counties are violating: Cabell County, West Virginia; Lawrence County, Ohio; and the adjacent Scioto County, Ohio. Based on the analysis for this factor for Kentucky only, Boyd County has attaining monitoring data very close to the standard, thus indicating a potential to contribute to the PM_{2.5} violations in the area. This factor is not significant for the remaining Kentucky counties.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Huntington-Ashland MSA and adjacent counties with significant emissions. The total MSA 2002 population is 313,239. (MSA counties are in **bold**; Kentucky MSA counties are in ***bold italics***.)

County	2002 Population	Percent of Total MSA Population	2002 Population Density
Cabell (WV)	95,266	30.41	338
<i>Boyd (KY)</i>	<i>49,603</i>	<i>15.84</i>	<i>310</i>
Wayne (WV)	42,382	13.53	84
<i>Greenup (KY)</i>	<i>36,761</i>	<i>11.74</i>	<i>106</i>
Lawrence (OH)	62,172	19.85	137
<i>Carter (KY)</i>	<i>27,055</i>	<i>8.64</i>	<i>66</i>
Gallia (OH)	31,301		67
Adams (OH)	27,804		48
Putnam (WV)	52,230		151
Mason (WV)	26,004		60
Scioto (OH)	78,041		128

Based on the analysis for this factor for Kentucky only, Boyd County has the third largest population in the MSA and the second largest population density, indicating a potential to contribute to the PM_{2.5} violations in the area. This factor is not significant for the remaining Kentucky counties.

Factor 4: Traffic and commuting patterns

Commuting Information

Total number of workers in Boyd County, KY: 19,106

Commuters in Boyd County, KY who work in Boyd County, KY: 13,816 (72%)
 Commuters from Boyd County, KY to Cabell County, WV: 1,157 (6%)
 Commuters from Boyd County, KY to Lawrence County, OH: 540 (3%)

Total number of workers in Carter County, KY: 10,258
 Commuters in Carter County, KY who work in Carter County, KY: 5,641 (55%)
 Commuters from Carter County, KY to Boyd County, KY: 1,401 (14%)
 Commuters from Carter County, KY to Cabell County, WV: 237 (2%)

Total number of workers in Greenup County, KY: 13,798
 Commuters in Greenup County, KY who work in Greenup County, KY: 5,930 (43%)
 Commuters from Greenup County, KY to Boyd County, KY: 4,147 (30%)
 Commuters from Greenup County, KY to Cabell County, WV: 473 (3%)
 Commuters from Greenup County, KY to Lawrence County, OH: 443 (3%)
 Commuters from Greenup County, KY to Scioto County, KY: 1,252 (9%)

Total number of workers in Lawrence County, KY: 4,899
 Commuters in Lawrence County, KY who work in Lawrence County, KY: 2,483 (51%)
 Commuters from Lawrence County, KY to Boyd County, KY: 575 (12%)
 Commuters from Lawrence County, KY to Cabell County, WV: 193 (4%)
 Commuters from Lawrence County, KY to Lawrence and Scioto Counties, OH: 0 (0%)

Based on commuting data above, none of the Kentucky counties appear to be contributing a significant level of onroad mobile source emissions to the area.

Vehicle Miles Traveled:

The following table has the vehicle miles traveled (thousand miles) for the counties in the Huntington-Ashland MSA and some adjacent counties with significant emissions. (MSA counties are in **bold**; Kentucky MSA counties are in ***bold italics***.)

County	2002 VMT (thousand miles/year)
Cabell (WV)	1,030
<i>Boyd (KY)</i>	<i>411</i>
Wayne (WV)	377
<i>Greenup (KY)</i>	<i>264</i>
Lawrence (OH)	796
<i>Carter (KY)</i>	<i>665</i>
Gallia (OH)	266
Adams (OH)	283
Putnam (WV)	578
Mason (WV)	270
Scioto (OH)	633

Based on the total VMT of the Kentucky counties only, there appears to be a potential contribution of onroad mobile source emissions to the area from Boyd and Carter Counties.

However, the analysis of the commuting data above shows that a low number of workers commute from these Kentucky counties into the violating counties. Thus, this factor is not significant for the Kentucky counties listed above when VMT and commuting data are analyzed together.

Factor 5: Expected growth

The following table has the population and population growth figures for the Huntington-Ashland MSA and adjacent counties with significant emissions. (MSA counties are in **bold**; Kentucky MSA counties are in ***bold italics***.)

County	2002 Population	growth (90-00)	% growth (90-00)
Cabell (WV)	95,266	-43	-0
<i>Boyd (KY)</i>	<i>49,603</i>	<i>-1,398</i>	<i>-3</i>
Wayne (WV)	42,382	1,267	3
<i>Greenup (KY)</i>	<i>36,761</i>	<i>149</i>	<i>0</i>
Lawrence (OH)	62,172	485	1
<i>Carter (KY)</i>	<i>27,055</i>	<i>2,549</i>	<i>10</i>
Gallia (OH)	31,301	115	0
Adams (OH)	27,804	1,959	8
Putnam (WV)	52,230	8,754	20
Mason (WV)	26,004	779	3
Scioto (OH)	78,041	-1,132	-1

Based on an analysis of this factor for Kentucky only, there appears to be relatively significant population growth in Carter County to indicate a potential air quality contribution. However, Carter County's population is low. Boyd and Greenup Counties have a negative or zero population growth rate. Thus, this factor is not significant for the Kentucky counties.

Factor 6: Meteorology

The following meteorological information was provided by Kentucky. The text below is the same for Boyd, Carter, and Greenup Counties in Kentucky. The figure referenced is a wind rose for April 1-October 31 for the 1988-1992 period that is provided in Kentucky's PM2.5 recommendations submittal.

Meteorological Information

“Due to the close proximity of Huntington, West Virginia, meteorological data from Huntington was used for this Kentucky area. Wind speed/wind direction information shows that the majority of the time for the period 1988–1992, the wind in the Huntington-Ashland area came from the southwest and typically from 4-6 knots. (See figure 1-A) The mean high temperature for July for the area from 1961 through 1990 was 85° F and the mean low was 65° F. The mean precipitation for the same period was 4.5 inches.” (Source: Kentucky PM2.5 submittal)

Based on an analysis of this factor, the information provided is not sufficient to provide a compelling argument to exclude counties based on prevailing winds. The information provided was for only the summertime winds.

Factor 7: Geography/topography

Based on an analysis of this factor, there are no significant topographical issues associated with this MSA.

Factor 8: Jurisdictional boundaries

The following MSA counties were designated nonattainment for the 8-hour ozone standard on April 15, 2004: Boyd County, Kentucky; the West Virginia Counties of Cabell, Wayne, and Putnam; and no counties in Ohio. This factor did not play a significant role in the decision-making process.

Factor 9: Level of control of emission sources

The following information was provided by Kentucky for Boyd, Carter, and Greenup Counties. *“Point sources located within...County are subject to PSD requirements, CTG RACT requirements, Maximum Achievable Control Technology (MACT) requirements for sources of Hazardous Air Pollutants, and New Source Performance Standards (NSPS).”* This factor did not play a significant role in the decision-making process for these counties

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Lawrence County, KY:

In the June 29, 2004, letters from EPA to the States responding to their designation recommendations, EPA recommended the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant to include it in the nonattainment area. Lawrence County, Kentucky, is one of those counties.

Lawrence County, Kentucky, has low population (15,784 compared to 95,266 and 62,172 in the violating MSA counties of Cabell, West Virginia and Lawrence, Ohio, respectively), low population density (38 people per square mile compared to 338 in Cabell, West Virginia and 137 in Lawrence, Ohio), low VMT (163,000 compared to 1,030,000 and 796,000 in Cabell, West Virginia and Lawrence, Ohio), and the only large point source is the Big Sandy Power Plant. Lawrence County, Kentucky, has no monitor.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant. The Commonwealth of Kentucky subsequently submitted a partial county recommendation that included the Big Sandy Power Plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifier (StateFIPs-CoFIPs-Tract#-Block Group#) 21-127-9901-6 portion of Lawrence County, Kentucky as part of the Huntington-Ashland nonattainment area and the remainder of the county as attainment/unclassifiable.

Corrections to TSD to Huntington-Ashland MSA:

6.4.3.4 - Factor 1:

Deletion: (over 10,000 tons per year of any pollutant)

6.4.3.4 - Factor 2:

The design value for Boyd County is corrected to read as follows:

County	2001-2003 design value
<i>Boyd, KY</i>	<i>14.9</i>

6.4.3.4 - Factor 3:

The following information is inserted into the population data table:

County	2002 Population	Percent of Total MSA Population	2002 Population Density
Lawrence (KY)	15,784		38

6.4.3.4 - Factor 4:

The following information is inserted into the VMT data table:

County	2002 VMT (thousand miles/year)
Lawrence (KY)	163

6.4.3.4 - Factor 5:

The following information is inserted into the population growth table:

County	2002 Population	growth (90-00)	% growth (90-00)
Lawrence (KY)	15,784	1,571	11

Insert the following statements regarding Lawrence County, KY as follows (*additions* are in italics, deletions are in ~~strikeout~~).

Based on an analysis of this factor for Kentucky only, there appears to be relatively significant population growth in Carter *and Lawrence Counties in Kentucky* to indicate a potential air quality contribution. However, *the populations of Carter and Lawrence Counties* ~~population is~~ are low.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Huntington–Ashland, WV- KY-OH area: Boyd and Lawrence (Partial).

6.4.3.5 Boyd County Area

Kentucky anticipates that emissions of PM_{2.5}, SO_x, and NO_x will decrease substantially within Boyd County over the next two years. These anticipated emission decreases are due to source modernization and new controls being implemented at two major sources in Boyd County: the Marathon-Ashland Refinery and Calgon Carbon Corporation.

For the Marathon-Ashland Refinery, the facility modifications are anticipated to be completed by the end of 2005. According to Kentucky, based on 2002 emissions data, this would mean an approximate reduction of 1,571 tons per year of SO₂, a 761 ton per year reduction in NO_x, and a 32 ton per year reduction in particulate matter.

For Calgon Carbon Corporation, the May 2003 shutdown of two of their activator lines resulted in SO₂ emissions being reduced from this facility by approximately 187 tons in 2003. Before these lines can be reactivated, scrubbers, with SO₂ and PM control efficiencies of 90% will be required to be installed on these units. If brought back into operation, these units will have controls in place to reduce emissions of SO₂ from these two lines to approximately 32 tons per year.

Based on an analysis of this factor, these controls will not be implemented in a timeframe early enough to influence the decision for Boyd County on PM_{2.5} designations.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following

counties as nonattainment for the Huntington–Ashland, WV- KY-OH area: Boyd and Lawrence (Partial).

6.4.4 EPA 9-Factor Analyses for North Carolina for the Designation of Nonattainment Areas for PM_{2.5}

6.4.4.1 Greensboro-Winston-Salem-High Point Area

In February 2004, North Carolina recommended that the entire county of Davidson, be designated as nonattainment for the Fine Particulate Matter Standard. The table below shows the State recommendations and EPA modifications for the Particulate Matter(PM 2.5) nonattainment area in Greensboro-Winston-Salem-High Point, NC. EPA is recommending Davidson County be designated nonattainment because it has a violating PM 2.5 monitor. The MSA counties of Guilford, Stokes, Forsyth and Randolph are also being recommended as nonattainment. Guilford, Forsyth and Randolph counties are adjacent to Davidson County and have large populations and large emissions. Stokes has significant power plant emissions. EPA agrees that Alamance, Davie, Yadkin, Rowan, Chatham, Rockingham, and Iredell Counties be designated attainment/unclassifiable. Alamance is an MSA county with an attaining monitor of 13.7 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), 75 % of the commuters remain in Alamance County and the county has low emissions. Davie and Yadkin are MSA counties that do not contain PM 2.5 monitors, have low populations, and low commuting into Davidson. There is significant distance between the violating monitor and the counties of Iredell and Yadkin. Rowan and Iredell are adjacent to the MSA, do not contain PM 2.5 monitors and are a part of the Charlotte-Gastonia-Rock Hill nonattainment area for ozone. Rowan and Rockingham both have small power plants and there are attaining monitors in counties between the SO₂/NO_x sources in Rowan and Rockingham counties and the violating monitor. Chatham is an adjacent county to the Greensboro-Winston-Salem-High Point MSA with an attaining monitor of 12.2 $\mu\text{g}/\text{m}^3$, has low population, and part of the county is in the Raleigh-Durham-Chapel Hill nonattainment area for ozone. The remaining adjacent counties all have low emissions, low population and low VMT, indicating they should be attainment/unclassifiable.

Area	EPA Recommendation	State Recommendation
Greensboro-Winston-Salem-High Point, NC	Full Counties: Stokes, Guilford, Davidson, Forsyth, and Randolph	Full Counties: Davidson

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC, and Ammonia (Amm) emissions in tons, and weighted emissions scores for the Greensboro-Winston-Salem-High Point Area and surrounding counties. The MSA counties are in **bold**.

		PM 2.5	SO ₂	NO _x	VOC	Amm	Weighted emissions score	Cumulative Weighted emissions score
NC	Stokes	4,821	83,409	35,936	2,566	357	32.8	32.8
NC	Guilford	2,418	2,833	19,068	34,464	1,178	17.6	50.4
NC	Davidson	1,951	1,398	11,281	14,970	632	12.9	63.3
NC	Forsyth	1,559	5,885	14,552	20,679	722	11.7	75.0
NC	Randolph	1,370	907	5,898	10,307	4,014	9.5	84.5
NC	Alamance	1,181	749	5,618	8,967	730	8.2	92.7
NC	Yadkin	606	318	2,061	2,247	896	4.0	96.7
NC	Davie	508	205	1,959	3,278	448	3.3	100.0
NC	Rowan	2,012	12,465	11,681	11,323	726	13.4	
NC	Chatham	1,714	11,605	5,823	4,734	3,012	11.7	
NC	Rockingham	1,555	6,263	12,227	8,770	523	11.2	
NC	Iredell	1,537	1,365	11,065	10,346	2,090	10.8	
NC	Surry	1,224	1,238	5,055	7,478	1,811	8.5	
VA	Pittsylvania	980	1,828	7,490	4,149	581	7.2	
NC	Moore	956	409	3,197	6,519	2,396	6.9	
NC	Wilkes	966	647	2,890	5,097	5,300	6.6	
NC	Orange	857	756	6,264	6,751	572	6.4	
VA	Henry	818	535	3,811	10,517	197	5.6	
NC	Stanly	795	3,129	2,891	4,581	1,460	5.3	
NC	Montgomery	516	484	1,631	4,175	1,246	3.6	
NC	Caswell	483	199	1,071	1,622	155	3.2	
VA	Patrick	408	176	1,039	1,363	214	2.8	
VA	Carroll	378	509	2,305	1,986	441	2.7	
VA	Grayson	291	95	819	952	405	2.0	
NC	Alleghany	217	190	379	590	425	1.4	

Based on the analysis for this factor, there appears to be emissions in Stokes, Guilford, Forsyth, and Randolph counties that contribute to the air quality in Davidson County, resulting in a violating monitor there. This analysis shows that the adjacent counties of Rowan, Chatham, Rockingham, and Iredell have emissions that may contribute to the violation in Davidson County.

However, these counties are more distant from the violating monitor. Chatham County has an attaining monitor and is part of the Raleigh MSA. Rowan and part of Iredell County are in the Charlotte ozone nonattainment area.

Factor 2: Air Quality in potentially included versus excluded areas

		2001-2003 Design Value
NC	Guilford	14.1
NC	Davidson	15.8
NC	Forsyth	14.6
NC	Alamance	13.7
NC	Chatham	12.2
NC	Orange	13.1
NC	Montgomery	12.1
NC	Caswell	13.3

There are six monitors in the MSA (two in Guilford, and two in Forsyth counties and one in Davidson, and Alamance counties) and five monitors in the adjacent counties. The monitor in Davidson County, is violating the Particulate Matter Standard of 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). All other monitors in this area are attaining the Particulate Matter Standard.

Factor 3: Population Density and Degree of Urbanization including commercial development in included versus excluded areas

The following table has the populations for the counties in the Greensboro-Winston-Salem-High Point area and adjacent counties with significant weighted emissions scores.

		2002 Population	% Population of MSA	Population Density (pop./ mi ²)
NC	Stokes	44,984	3.5	100
NC	Guilford	430,937	33.5	663
NC	Davidson	151,238	11.6	274
NC	Forsyth	314,933	24.5	768
NC	Randolph	134,217	10.4	170
NC	Alamance	135,893	10.6	315
NC	Yadkin	37,329	2.9	111
NC	Davie	36,734	2.9	139
NC	Rowan	133,359		261
NC	Chatham	53,893		79
NC	Rockingham	92,778		164
NC	Iredell	130,178		227

Based on the analysis for this factor, there appears to be significant populations in Guilford, Forsyth, Davidson, Rowan, Iredell, Randolph and Alamance counties, indicating potential contribution.

Factor 4: Traffic and commuting patterns

Commuting Information

Total commuters in Davidson County: 72,893

Commuters in Davidson County, NC, who work in Davidson County: 40,621 (56%)

Total commuters in Forsyth County: 147,838

Commuters in Forsyth County, NC, who work in Forsyth County: 119,233 (81%)

Commuters from Forsyth County, NC to Davidson County, NC: 4,136 (3%)

Total commuters in Guilford County: 213,079

Commuters in Guilford County, NC, who work in Guilford County: 187,150 (88%)

Commuters from Guilford County, NC to Davidson County, NC: 2,982 (1%)

Total commuters in Randolph County: 65,803

Commuters in Randolph County, NC, who work in Randolph County: 38,637 (59%)

Commuters from Randolph County, NC to Davidson County, NC: 2,607 (4%)

Total commuters in Stokes County: 21,709

Commuters in Stokes County, NC, who work in Stokes County: 6,330 (29%)

Commuters from Stokes County, NC to Davidson County, NC: 252 (1%)

The counties of Davie and Rowan have a small number of commuters and very few of them commute to Davidson County. Chatham, Yadkin, Iredell, and Rockingham counties have a low number of commuters and most of them stay within their counties.

Based on commuting patterns, Forsyth and Guilford appear to have the most impact on the violating monitor in Davidson County. However, the impact on the monitor from commuting appears to be small.

The following table contains the vehicle miles traveled (VMT) for the counties in the Greensboro-Winston-Salem-High Point area and some adjacent counties with significant emissions. (MSA counties are in **bold**).

		2002 VMT (thousands of miles)
NC	Stokes	415
NC	Guilford	5,096
NC	Davidson	1,765
NC	Forsyth	3,832
NC	Randolph	1,486
NC	Alamance	1,575
NC	Yadkin	520
NC	Davie	476
NC	Rowan	1,654
NC	Chatham	434
NC	Rockingham	923
NC	Iredell	1,901

Based on total VMT, there appears to be contribution to air quality in Davidson County from Guilford, Davidson, Forsyth, Rowan, Iredell, Randolph and Alamance counties. However, there

is very low or no commuting into Davidson County from Rowan, Iredell, and Alamance Counties

Factor 5: Expected growth

The following table has the population and population growth on a percentage basis figures for counties in the Greensboro-Winston-Salem-High Point MSA and some adjacent counties with significant emissions. As noted above, Chatham County is part of the Raleigh MSA, and Iredell and Rowan Counties are in the Charlotte rather than the Greensboro ozone nonattainment area.

		2002 Population	Growth '90-'00	% Change '90-'00
NC	Stokes	44,984	7,488	20
NC	Guilford	430,937	73,628	21
NC	Davidson	151,238	20,569	16
NC	Forsyth	314,933	40,189	15
NC	Randolph	134,217	23,908	22
NC	Alamance	135,893	22,587	21
NC	Yadkin	37,329	5,860	19
NC	Davie	36,734	6,976	25
NC	Rowan	133,359	19,735	18
NC	Chatham	53,893	10,570	27
NC	Rockingham	92,778	5,864	7
NC	Iredell	130,178	29,729	32

Based on the analysis for this factor, there appears to be significant growth in Davidson, Guilford, Forsyth, Alamance, Randolph, Rowan, Chatham, and Iredell counties indicating a potential contribution to the air quality in Davidson County.

Factor 6: Meteorology

The following meteorological information was provided by North Carolina. This summarizes the wind directions for the MSA during the time periods when PM_{2.5} values are the highest.

Summertime: southwesterly winds and recirculating patterns dominate. Main urban areas of influence include Charlotte, the Triad, and Hickory.

Wintertime: More northerly and stronger northwesterly winds observed that during the summer. High PM_{2.5} is generally observed prior to frontal passages when high pressure is in control or during strong nocturnal low-level temperature inversions. Year-round trajectories indicate influence from nearby states.

The information provided is not sufficient to provide a compelling argument to exclude counties based on prevailing winds.

Factor 7: Geography/topography

There are no significant topographical issues associated with this MSA. Chatham, Iredell, and Rockingham counties are one or more counties away from Davidson county. Additionally, there is one or more attaining monitors between the major emissions sources in these counties and the violating monitor, indicating no contribution.

Factor 8: Jurisdictional boundaries

The 8-hour nonattainment boundary designation for the Greensboro-Winston-Salem-High Point area includes the entire counties of Davidson, Davie, Forsyth, Guilford, Alamance, Caswell, Randolph, and Rockingham. Davie, Alamance, Caswell, and Rockingham were designated nonattainment for ozone because they contained violating monitors not because they were found to be contributing. Rowan county and a portion of Iredell county were designated nonattainment for the ozone standard as apart of the Charlotte-Gastonia-Rock Hill MSA area. Due to significant NO_x controls, Stokes County was determined not to contribute to the ozone violations.

Factor 9: Level of control of emission sources

Belews Creek is the largest coal-burning station owned by Duke Power located in Stokes County, NC. Duke Power completed the first phase of its massive Selective Catalytic Reduction (SCR) project at Belews Creek Steam Station that will reduce the power plant's nitrogen oxide emissions by over 90 percent. No scrubbers are installed at this time, but are scheduled to be installed in 2009.

The state initiatives are listed below:

NO_x SIP Call

The Clean Smokestacks Act

Clean Air Bill

On Board Diagnostics II Emissions Inspection Program

PM_{2.5} Forecasting

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial recommendations on June 29, included Forsyth, Randolph and Stokes Counties as part of the Greensboro nonattainment area. Upon further review of additional information provided by the State, EPA is revising its recommendation and is designating Forsyth, Randolph and Stokes Counties as attainment/unclassifiable.

The State of North Carolina has taken a proactive approach to solving its air pollution problems. Several programs have been implemented and will continue to be implemented to control PM_{2.5} precursors. The State has a robust PM_{2.5} monitoring network. The Clean Smokestacks Act requires NO_x SIP Call controls to be operated year round and requires significant emission reductions of SO₂ from power plants. These NO_x and SO₂ reductions must occur within the boundaries of North Carolina. As a statewide effort, several mobile source controls have been implemented. The On Board Diagnostics II Emissions Inspection and Maintenance (I/M)

program has expanded to now encompass 48 counties, including all MSA counties and covering 82% of all statewide vehicles. EPA and State grants have been used to support of their efforts to reduce emissions from mobile sources which include Alternate Fuel Vehicle Infrastructure, Compressed Natural Gas Stations, bike racks on buses, and a Mobile Source Abatement Program.

The Greensboro area Early Action Compact (EAC) includes the counties of Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry and Yadkin. As an EAC area, all 11 counties are adopting policies to encourage and promote diesel retrofits. Less polluting vehicles area expected to result in a reduction in emissions of 1.1 tpy of VOC and 0.9 tpy of NOx. An increase in ridership on regional bus services is projected to decrease VOC emissions by 8.9 tpy and NOx emissions by 7.3 tpy. All diesel vehicles will be converted to biodiesel. In addition, an increase in telecommuting is expected to lead to a decrease of VOC and NOx emissions by 189 tpy and 155 tpy, respectively. Through the use of non-motorized transportation, all Triad EAC Counties are also expected to decrease VOC emissions by 279 tpy and NOx by 229 tpy. As part of Duke Energy's initiative to cleaner air, implementation of a Meter Reading Optimizing program will reduce Vehicle Miles Traveled (VMT) in all 11 EAC Counties.

Stokes County, NC:

The Belews Creek Steam Station is the major source of the County's emissions. However, Duke Power, as part of the NOx SIP Call, has completed the Selective Catalytic Reduction (SCR) project and began operation on unit one in 2003 and unit two in 2004. Additionally, unit two had burner technology installed. NOx emissions at the Belews Creek Steam Station were reduced by 36,545 tons per year (tpy) to 7,022 TPY by the end of 2004. Per the Clean Smokestacks Legislation, SCR must be operated year round by 2009. In addition, the Belews Creek Power Plant will complete the installation of state of the art scrubbers on both units by 2008, reducing sulfur dioxide (SO2) emissions by 90% to 10,805 TPY and achieve an emission rate of 0.15 lb/mmBTU emission rate. Stokes County rates low for other factors, such as population, population density, commuting patterns, and VMT.

Duke Power has committed to work with the State of North Carolina to expeditiously place the schedule for compliance with the Clean Smokestacks requirements (SO2 & NOx) into the title V permit. This schedule will include installation of state of the art scrubbers by 2008.

Forsyth County, NC:

Forsyth County has two attaining monitors at 14.0 and 14.6 micrograms/cubic meter. Forsyth emissions in tons per year are as follows: PM emissions 1,559 tpy (11% of MSA), SO2 emissions 5,885 tpy (6% of MSA), NOx emissions 14,552 TPY (15% of MSA). Even though Forsyth County has the second highest MSA population with 314,933 people representing 24.5% of the MSA, it is substantially less than Guilford County with a population of 430,937. Of 147,838 commuters in Forsyth County, 119,233 (80.7%) commuters stay within the county. The majority of emissions are from mobile sources. These emissions are controlled (or addressed) as described above.

Wind direction and pollution roses for the Greensboro area were more predominant in the direction of Guilford County than Forsyth County.

Randolph County, NC:

Randolph County's emissions represent a small percentage of the total emissions for the MSA. Randolph County's total emissions in tons per year (tpy) are: PM 1,370 (9.5% of the MSA), SO₂ 907 (0.9% of the MSA), NO_x 5,898 (6.1% of the MSA). The population of Randolph County, 134,217, is low compared to Guilford County with a population of 430,937 and Randolph County's VMT of 1,486 is one of the lowest in the MSA as compared to 5,096 thousands of miles.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Greensboro-Winston Salem-High Point, NC area: Davidson and Guilford .

6.4.4.2 Hickory-Morganton-Lenoir Area

The following is the nine factor analysis for Hickory-Morganton-Lenoir, NC. The Hickory-Morganton-Lenoir, NC Metropolitan Statistical Area (MSA) contains the counties of Catawba, Caldwell, Burke, and Alexander.

In February 2004, North Carolina recommended that the Unifour Metropolitan Planning Organization's (MPO) Planning Boundary in Catawba County, be designated as nonattainment. The table below shows State Recommendations and EPA recommended modifications for the Particulate Matter 2.5 (PM 2.5) nonattainment area in the Hickory-Morganton-Lenoir area. EPA is modifying the recommendation to include the entire county of Catawba and partial county boundaries in Burke and Caldwell Counties. Catawba County has a violating PM 2.5 monitor. The partial county boundaries in Burke and Caldwell Counties follow the MPO boundary lines which were the boundaries determined in the 8-hour ozone designation in April 2004 for the two counties. Over 20 percent of the commuters from Burke and Caldwell counties commute to Catawba County and both counties contain population levels that indicate contribution. EPA agrees that the MSA county of Alexander and the adjacent counties of Rutherford, Iredell, Cleveland, and Wilkes be designated attainment/unclassifiable. These counties have low population, and are low commuting into Catawba County, distant from the violating monitor in Catawba County. The remaining adjacent counties all have low emissions and low population, indicating they should be attainment/unclassifiable.

Area	EPA Recommendation	State Recommendation
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Hickory-Morganton-Lenoir	Full Counties: Catawba	Full Counties: None
	Partial Counties: Burke and Caldwell	Partial Counties: Catawba

The following is a brief summary of the 9 criteria for the Hickory-Morganton-Lenoir MSA and surrounding counties. These analyses were based on existing available data.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC, and Ammonia (Amm) emissions in tons, and weighted emissions scores for the Hickory-Morganton-Lenoir Area and surrounding counties. The Metropolitan Statistical Area (MSA) counties are in **bold**.

	PM 2.5	SO₂	NO_x	VOC	Amm	Weighted emissions score	Cumulative Weighted emissions score
Catawba	5,153	78,620	27,968	19,760	886	59.7	59.7
Caldwell	1,104	634	3,530	11,122	391	18.1	77.8
Burke	1,198	877	4,601	7,721	562	17.0	94.8
Alexander	365	349	988	3,312	1,217	5.1	99.9
Rutherford	2,323	30,023	12,135	4,847	254	28.4	
Iredell	1,537	1,365	11,065	10,346	2,090	25.3	
Cleveland	1,258	1,261	4,975	6,591	1,240	18.4	
Wilkes	966	647	2,890	5,097	5,300	15.3	
Mc Dowell	751	373	3,675	4,230	214	13.6	
Lincoln	785	513	2,880	4,556	645	10.8	
Watauga	541	352	1,523	2,370	341	8.5	
Avery	269	163	730	985	77	4.4	

Based on the analysis for this factor, there appears to be emissions in the MSA counties of Caldwell and Burke, counties that contribute to the violation in Catawba County. Although there are large SO₂ emissions in Rutherford county, adjacent to Burke, the source is distant from the violating monitor.

Factor 2: Air Quality in potentially included versus excluded areas

	2001-2003 Design Value
Catawba	15.5
Mc Dowell	14.2
Watauga	10.9

There is one monitor in this area, in Catawba County, which is violating the particulate matter standard of 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Two adjacent counties contain monitors attaining the standard.

Factor 3: Population Density and Degree of Urbanization

The following table has the populations for the counties in the Hickory-Morganton-Lenoir area and adjacent counties with significant emissions. (MSA counties are in **bold**.)

	2002 Population	% Population of MSA	Population Density (pop./ mi ²)
Catawba	146,690	42.0	367
Caldwell	78,513	22.5	166
Burke	89,638	25.7	177
Alexander	34,400	9.8	132
Rutherford	63,287		112
Iredell	130,178		227
Cleveland	97,960		211
Wilkes	66,773		88

Based on the analysis for this factor, there appears to significant populations in Catawba, Iredell, Cleveland, Caldwell and Burke counties, indicating potential contribution.

Factor 4: Traffic and commuting patterns

Commuting Information

Total commuters in Catawba County: 73, 984

Commuters in Catawba County, NC, who work in Catawba County: 62, 459 (84%)

Total commuters in Rutherford County: 27, 673
Commuters in Rutherford County, NC, who work in Rutherford County: 21, 812 (79%)
Commuters from Rutherford County, NC to Burke County, NC: 305 (1%)

Total commuters in Caldwell County: 38, 970
Commuters in Caldwell County, NC, who work in Caldwell County: 26, 932 (69 %)
Commuters from Caldwell County, NC to Catawba County, NC: 8,011 (21 %)

Total commuters in Burke County: 42,214
Commuters in Burke County, NC, who work in Burke County: 29, 123 (69%)
Commuters from Burke County, NC to Catawba County, NC: 8,366 (20%)

Total commuters in Alexander County: 31, 041
Commuters in Alexander County, NC, who work in Alexander County: 24, 270 (51%)
Commuters from Alexander County, NC to Catawba County, NC: 5,679 (32%)

Most of the commuters in Iredell, Cleveland and Wilkes counties commute within their counties and very few of them commute to Davidson County.

Based on commuting patterns, Caldwell, Alexander and Burke counties appear to have the most potential impact on the violating monitor in Catawba county.

The following table contains the vehicle miles traveled (VMT) for the counties in the Hickory-Morganton-Lenoir MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in **bold**.)

	2002 VMT (thousands of miles)
Catawba	2,048
Caldwell	738
Burke	1,112
Alexander	229
Rutherford	606
Iredell	1,901
Cleveland	1,125
Wilkes	619

Based on the analysis for this factor, Burke County has VMT that appears to contribute to the air quality in Catawba County. Although the adjacent counties of Iredell and Cleveland have significant levels of VMT, there is little commuting to Catawba County from these counties.

Factor 5: Expected growth

The following table has the population and population growth figures for counties in the Hickory-Morganton-Lenoir MSA and some adjacent counties with significant emissions.

	2002 Population	Growth '90-'00	Pct change '90-'00
Catawba	146,690	23,273	20
Caldwell	78,513	6,706	9
Burke	89,638	13,404	18
Alexander	34,400	6,059	22
Rutherford	63,287	5,981	11
Iredell	130,178	29,729	32
Cleveland	97,960	11,573	14
Wilkes	66,773	6,239	11

Based on the analysis for this factor, there appears to be significant growth on a percentage in Catawba and Alexander Counties in the MSA and adjacent Iredell County, indicating a potential contribution to the air quality in Catawba County. Although the percentage growth is high for the Iredell County, it is more closely associated with the Charlotte area.

Factor 6: Meteorology

The following meteorological information was provided by North Carolina. This summarizes the wind directions for the MSA during the time periods when PM_{2.5} values are the highest.

Summertime: southwesterly winds and recirculating patterns dominate. Main urban areas of influence include Charlotte, the Triad, and Hickory.

Wintertime: More northerly and stronger northwesterly winds observed that during the summer. High PM_{2.5} is generally observed prior to frontal passages when high pressure is in control or during strong nocturnal low-level temperature inversions. Year-round trajectories indicate influence from nearby states.

The information provided is not sufficient to provide a compelling argument to exclude counties based on prevailing winds.

Factor 7: Geography/topography

There are no significant topographical issues associated with this MSA.

Factor 8: Jurisdictional boundaries

The 8-hour nonattainment boundary designation for the Hickory-Morganton-Lenoir area includes the entire counties of Alexander and Catawba and partial counties of Burke and Caldwell. The nonattainment designation in Burke and Caldwell counties are along the Unifour Metropolitan Planning Organization boundaries. Catawba County is located geographically between Alexander and Lincoln Counties, which both have monitors violating the 8-hour ozone standard.

In Catawba County, a second monitor was operated approximately 10 miles southwest of the current violating Hickory monitor. This monitor was further removed from a major highway. The location of this monitor at a rescue squad and was not able to continue at that location. While in existence for seven quarters, this monitor showed an average of 1.89 $\mu\text{g}/\text{m}^3$ lower than the current violating monitor. Therefore, the state believes that this monitor would have continued to show attainment/unclassifiable if it remained in existence to collect three years of data.

Factor 9: Level of control of emission sources

Duke Power - Marshall Steam Station (Catawba County)

No scrubbers are installed at this time. However, in 2004, Duke Power began installation of flue gas desulfurization (scrubber) equipment. This equipment will lower sulfur dioxide emissions by approximately 90 percent. The project is scheduled for completion in 2007.

The state initiatives are listed below:

NO_x SIP Call

The Clean Smokestacks Act

Clean Air Bill

On Board Diagnostics II Emissions Inspection Program

PM_{2.5} Forecasting

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendations on June 29, 2004, included a portion of Burke and Caldwell Counties. Upon further review of additional information provided by the State, EPA is revising its recommendation and is designating Burke and Caldwell Counties as attainment/unclassifiable.

The State of North Carolina has taken a proactive approach to solving its air pollution problems. Several programs have been implemented and will continue to be implemented to control PM_{2.5} pollution. The State has a robust PM_{2.5} monitoring network. The Clean Smokestacks Act requires NO_x controls to be operated year round and requires substantial SO₂ reductions from

power plants. The NO_x and SO₂ reductions must be generated within the State. As a statewide effort, several mobile source controls have been implemented including I/M programs in Burke and Caldwell Counties beginning July 1, 2005. Burke County has expected decreases in NO_x of 1.29 tpd and VOC of 0.23 tpd while Caldwell County has expected decreases in NO_x of 0.20 tpd and VOC of 0.17 tpd. Additionally, Burke and Caldwell Counties are in the Unifour Early Action Compact and this area shows attainment of the 8-hour ozone NAAQS with 2004 data.

Burke County, NC:

Most of the MSA emissions are generated in Catawba County. Burke emissions in tons per year are as follows: PM emissions 1,198 TPY (15.3% of MSA), SO₂ emissions 877 TPY (only 1.1% of MSA), NO_x emissions 4,601 TPY (12.4% of MSA). Burke County has a population of 89,638 as compared to Catawba County's population of 146,690 people. In addition, Burke has a VMT of 1,112 thousand miles as compared to Catawba County's VMT of 2,048. Of 42,214 (24% of MSA) commuters in Burke County, 29,123 (69.0%) commuters stay within the county. There are no large point sources of precursor emissions and the majority of emissions are due to mobile emissions, which are controlled as described above.

Caldwell County, NC:

Most of the MSA emissions are generated in Catawba County. Caldwell emissions in tons per year are as follows: PM emissions 1,104 TPY (14.1% of MSA), SO₂ emissions 634 TPY (only 0.8% of MSA), NO_x emissions 3,530 TPY (9.5% of MSA). Caldwell County has a population of 78,513 as compared to Catawba County's population of 146,690 people. In addition, Caldwell has a VMT of 738 thousands of miles as compared to Catawba County's VMT of 2,048. Of 38,970 (23% of MSA) commuters in Caldwell County, 26,932 (69.1%) commuters stay within the county. There are no large point sources and the majority of emissions are due to mobile emissions, which are controlled as described above.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Hickory–Morganton–Lenoir, NC area: Catawba.

6.4.5 EPA 9-Factor Analyses for South Carolina for the Designation of Nonattainment Areas for PM_{2.5}

6.4.5.1 Greenville-Spartanburg-Anderson Area

In February 2004, South Carolina recommended that the entire state be designated attainment. Currently, all monitors with three years of complete data are attaining the Particulate Matter standard of 15.0 micrograms per cubic meter (µg/m³). However, Greenville County has a monitor that has not been in operation for three years, but is indicating potential to violate the PM 2.5 standard. Anderson and Spartanburg counties have emissions and population levels that potentially contribute to the high levels at the Greenville monitor in question. Therefore, EPA is modifying the State's recommendation to designate Anderson, Greenville and Spartanburg counties as unclassifiable. Once the monitor has operated for three full years, EPA in

conjunction with the State will reassess the situation and revise the designation based on three years of data.

Area	EPA Recommendation	State Recommendation
Greenville-Spartanburg-Anderson, SC	Full Counties: Anderson, Greenville, and Spartanburg as unclassifiable	Full Counties: None

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

Region 4's analysis for factor 1 looks primarily at PM_{2.5}, SO_x, NO_x, VOC, ammonia emissions and weighted emissions data. A score is assigned for each county reflecting the speciation profile of the urban increment and the corresponding weighted emissions of the MSA/CMSA. These scores add to 100 for the MSA/CMSA counties and are referred to as weighted emissions scores. Counties adjacent to the CSA can then be assigned an weighted emissions score based on the MSA/CMSA as a way to compare the emissions from those counties the MSA/CMSA counties.

The following table has 2001 PM_{2.5}, SO₂, NO_x, VOC and Ammonia (Amm) emissions in tons, and weighted emissions scores for the Greenville-Spartanburg-Anderson Area and surrounding counties. The Metropolitan Statistical Area (MSA) counties are in **bold**.

		PM	SO ₂	NO _x	VOC	Amm	Weighted emissions score	Cumulative Weighted emissions score
SC	Spartanburg	3070	2351	19046	23897	821	29.7	29.7
SC	Greenville	2793	3369	15407	28867	861	27.4	57.1
SC	Anderson	2904	9903	11559	13621	1090	22.9	80.0
SC	Pickens	1428	1239	5153	7489	274	12.5	92.5
SC	Cherokee	834	1270	4121	3538	301	7.4	
SC	York	2525	9714	12206	15064	1325	22.5	
NC	Rutherford	2323	30023	12135	4847	254	17.0	
NC	Cleveland	1258	1261	4975	6591	1240	11.4	
SC	Newberry	979	353	3682	3813	1357	11.0	
SC	Laurens	1027	597	5262	4846	414	10.2	
NC	Henderson	1068	419	4088	7066	358	10.1	
SC	Greenwood	1095	624	3680	4353	404	10.0	
SC	Oconee	1058	298	3561	4867	1457	9.7	
NC	Jackson	588	303	1344	1846	216	6.7	
NC	Macon	555	307	1164	1798	262	6.3	
SC	Union	549	849	2027	2047	197	5.8	
GA	Habersham	651	103	1757	2201	3031	5.6	
NC	Transylvania	449	3259	2824	3388	106	5.4	
GA	Rabun	455	66	943	1606	341	5.1	
SC	Abbeville	474	208	1384	1538	203	4.7	
GA	Elbert	410	71	1357	1280	343	3.8	
GA	Franklin	449	84	2068	1813	4128	3.7	
GA	Stephens	406	277	1480	2075	976	3.5	
GA	Hart	505	63	1321	1595	1516	3.2	

NC	Polk	266	105	1299	1149	256	3.1	
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Based on the analysis for this factor, there appears to be emissions in Spartanburg and Anderson counties that contribute to the air quality in Greenville County. The emissions in Pickens and Cherokee Counties are much less and farther from the Greenville monitor with potential violation.

Factor 2: Air Quality in potentially included versus excluded areas

		2001-2003 Design Value
SC	Spartanburg	13.7
SC	Greenville	14.5
SC	York	14.0
SC	Greenwood	13.1
SC	Oconee	10.6
NC	Jackson	13.0

All of the monitors in this area with three years of complete data are attaining the particulate matter standard. However, there is a monitor in Greenville County, SC with less than three years of data that indicates a potential to violate the standard of 15.0 $\mu\text{g}/\text{m}^3$.

Factor 3: Population Density and Degree of Urbanization

The following table has the populations for the counties in the Greenville-Spartanburg-Anderson area and adjacent counties with significant weighted emissions scores.

		2002 Population	% Population of MSA	Population Density (pop./mi²)
SC	Spartanburg	259,322	26.3	320
SC	Greenville	391,334	39.6	494
SC	Anderson	170,578	17.3	238
SC	Pickens	113,097	11.4	228
SC	Cherokee	53,524	5.4	136
SC	York	173,755		254
NC	Rutherford	63,287		112

Based on the analysis for this factor, there appears to be significant populations to indicate a contribution by Spartanburg and Anderson counties.

Factor 4: Traffic and commuting patterns

Commuting Information

Total commuters in Greenville County: 185,461

Commuters in Greenville County, SC who work in Greenville County: 24,270 (87%)

Total commuters in Spartanburg County: 117,096

Commuters in Spartanburg County, SC, who work in Spartanburg County: 95,496 (82%)

Commuters from Spartanburg County, SC to Greenville County, SC: 14,586 (12%)

Total commuters in Anderson County: 76,098

Commuters in Anderson County, SC, who work in Anderson County: 52,133 (69%)

Commuters from Anderson County, SC to Greenville County, SC: 13,766 (18%)

Total commuters in Pickens County: 52,130

Commuters in Pickens County, SC, who work in Pickens County: 28,951 (56%)

Commuters from Pickens County, SC to Greenville County, SC: 15,095 (29%)

Total commuters in Cherokee County: 22,999

Commuters in Cherokee County, SC, who work in Cherokee County: 16,052 (70%)

Commuters from Cherokee County, SC to Greenville County, SC: 431 (2%)

Greenville County has the largest number of commuters in Greenville-Spartanburg-Anderson MSA. There appears to be significant commuting from Spartanburg, Anderson, and Pickens Counties to indicate a contribution to the monitor in Greenville County.

The following table has the vehicle miles traveled (thousands of miles) for the counties in the Greenville-Spartanburg-Anderson area and some adjacent counties with significant weighted emissions scores. (MSA counties are in **bold**).

		2002 VMT
SC	Spartanburg	3,509
SC	Greenville	3,664
SC	Anderson	2,163
SC	Pickens	1,180
SC	Cherokee	754
SC	York	1,860
NC	Rutherford	606

Based on the analysis for this factor, there is contribution to air quality in Spartanburg, Greenville, Anderson, Pickens, and York counties.

Factor 5: Expected Growth

The following table has the population and population growth figures for counties in the Greenville-Spartanburg-Anderson area and some adjacent counties with significant weighted emissions scores.

		2002 Population	Growth '90-'00	% Change '90-'00
SC	Spartanburg	259,322	26,991	12
SC	Greenville	391,334	59,449	19
SC	Anderson	170,578	20,544	14
SC	Pickens	113,097	16,863	18
SC	Cherokee	53,524	8,031	18

SC	York	173,755	33,117	25
NC	Rutherford	63,287	5,981	11

Based on the analysis for this factor, there appears to be significant growth in Greenville, Spartanburg, Anderson, Pickens and York counties indicating a potential contribution to the air quality in Greenville County.

Factor 6: Meteorology

No meteorological information was provided by South Carolina. This factor did not play a significant role in the decision making process.

Factor 7: Geography/topography

The counties of Greenville, Spartanburg, Pickens, and York are located on the northern border of South Carolina, which borders the state of North Carolina.

No geographical or topographical data was provided by South Carolina.

This factor did not play a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

This factor did not play a significant role in the decision making process.

Factor 9: Level of control of emission sources

South Carolina is subject to the NO_x SIP Call and the Greenville-Spartanburg-Anderson MSA is participating in Early Action Compacts.

This factor did not play a significant role in the decision making process.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as unclassifiable for the Greenville-Spartanburg, SC area: Anderson, Greenville, and Spartanburg.

6.4.6 EPA 9-Factor Analyses for Tennessee for the Designation of Nonattainment Areas for PM_{2.5}

6.4.6.1 Chattanooga Area

The Chattanooga MSA contains the following Tennessee counties: Marion and Hamilton; and the following Georgia Counties: Dade, Walker, and Catoosa. Based on air quality data for 2001-2003, the monitor with the highest design value in Hamilton County has a design value of 16.1 and the monitor in Walker County has a design value of 15.6. No other counties in the MSA contain ambient air monitors. The State of Tennessee recommended as nonattainment the county

of Hamilton and the State of Georgia recommended as nonattainment the county of Walker. The States have recommended that all other counties be designated attainment. The State of Tennessee submitted some justification for this recommendation, however, they indicated that the detailed emission information would be provided at a later date. EPA is modifying the State of Tennessee's recommendation and will review the additional information during the 120 day period following the notification letter.

EPA has received some information from the State of Tennessee that Marion (MSA) County should be designated attainment for the PM_{2.5} standard and no justification from the State of Georgia indicating that any other counties should be included or excluded from the Chattanooga PM_{2.5} nonattainment area. Adjacent counties with significant emissions include McMinn and Roane Counties which are attached to the Knoxville nonattainment area and Floyd County which is a separate nonattainment area.

Additionally we have included in our recommended nonattainment area Jackson County, AL, that is adjacent to the Chattanooga MSA, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of this county, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility or facilities, should be designated nonattainment. Therefore EPA is modifying the States' recommendations to include all of the counties in the MSA and the adjacent county of Jackson, Alabama.

Area	EPA Recommendation	States Recommendations
Chattanooga	Full counties: Marion, Hamilton, TN; Dade, Walker, Catoosa, GA; Jackson, AL	Full counties: Hamilton and Walker

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table contains the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons and weighted emissions scores for the counties in the Chattanooga MSA and some adjacent counties. (MSA counties are in bold.)

County	PM	SOx	NOx	VOC	Amm	Weighted Emissions Score	Cumulative Weighted Emissions Score
Hamilton	1,498	5,300	20,048	27,150	1,022	49.5	49.5
Walker	856	632	2,798	4,516	958	17.9	67.4
Marion	679	477	3,156	2,640	501	14.1	81.5
Catoosa	617	167	3,085	3,601	680	11.9	93.4
Dade	302	107	2,415	1,574	285	6.5	99.9
Roane	4967	92331	30865	4300	285	296.9	
Jackson, AL	4389	44333	31502	4742	1494	176.1	
Floyd, GA	10057	31821	22736	7139	976	154.0	
McMinn	3348	10216	10829	5546	1268	73.3	
Whitfield, GA	2732	1747	7283	7386	991	54.2	
Rhea	1405	302	2625	3643	149	31.2	
Loudon	804	4035	5899	5338	360	24.3	
DeKalb, AL	1193	741	4776	5867	5765	21.3	
Bradley	1233	419	4230	7551	1916	21.1	
Warren	1164	1189	1869	3675	446	20.7	
Monroe	743	154	2387	3420	554	16.4	
Gordon, GA	872	200	3645	4019	2630	15.8	
Fannin, GA	614	65	887	1266	283	14.2	
Franklin	644	482	2100	2929	1512	13.4	
Chattooga, GA	450	1228	1834	1634	197	11.7	
Murray, GA	576	130	2067	1700	910	11.4	
Polk	295	2066	900	949	553	11.3	
Cherokee, NC	428	143	921	1753	111	10.6	
Grundy	202	164	1000	1150	1170	4.8	
Bledsoe	203	31	475	528	335	4.5	
Meigs	198	112	885	871	118	4.3	
Sequatchie	140	22	304	591	173	3.4	
Van Buren	118	178	291	320	74	3.3	

Based on the analysis for this factor there appears to be emissions in all MSA counties and the adjacent county of Jackson, AL, which show a potential to contribute. Other adjacent counties with large emissions (McMinn and Roane, TN and Floyd, GA) are included in other nonattainment areas.

Factor 2: Air quality in potentially included versus excluded areas

The following table contains the 2001-2003 PM2.5 Design Values for all Chattanooga MSA Counties and adjacent counties. (MSA counties are in bold.)

County	2001-2003 design value
Hamilton	16.1
Walker	15.6
Roane	14.2
Floyd, GA	15.7

McMinn	14.6
Loudon	15.4 *
DeKalb, AL	14.7

* Incomplete data that is not sufficient to determine attainment/nonattainment. Data substitution does not apply.

Based on this factor, Hamilton County, TN and Walker and Floyd Counties in GA are violating the PM 2.5 standard. Catoosa County, GA is located between violating monitors in Hamilton and Walker Counties.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table contains the populations for the counties in the Chattanooga MSA and some adjacent counties. Urban population figures were not available. (MSA counties are in bold.)

County	2002 Population	Percent of MSA Population (2002)	2002 Population Density (people/mile ²)
Hamilton	309,321	65.7	570
Walker	61,949	13.2	139
Marion	27,654	5.9	55
Catoosa	56,341	12.0	348
Dade	15,615	3.3	90
Roane	52,316		145
Jackson, AL	54,035		50
Floyd, GA	92,606		181
McMinn	50,051		116
Whitfield, GA	87,037		300

Based on the analysis for this factor, there appears to be population sufficient to indicate a contribution by the following MSA counties: Hamilton, Walker, and Catoosa. The five adjacent counties also have population with a potential to contribute.

Factor 4: Traffic and commuting patterns

Commuting Information

Hamilton has a working population of 146, 824

–Commuters who remain in Hamilton: 133,644 (91%)

Marion has a working population 11766.

–Commuters who remain in Marion: 5596 (48%)

–Commuters from Marion to Hamilton: 4271

Dade has a working population of 6983.

–Commuters who remain in Dade: 2363

–Commuters from Dade to Hamilton: 3091 (44%)

–Commuters from Dade to Walker: 747

Catoosa has a working population of 26710.

- Commuters who remain in Catoosa: 7167
- Commuters from Catoosa to Hamilton: 12320 (46%)
- Commuters from Catoosa to Walker:1937

Walker has a working population of 27223.

- Commuters who remain in Walker: 11244 (41%)
- Commuters from Walker to Hamilton: 9098

Whitfield, GA has a working population of 38,909

- Commuters who remain in Whitfield: 33,796 (87%)
- Remaining commuters do not commute to the Chattanooga MSA

DeKalb, AL has a working population of 7798

- Commuters who remain in DeKalb: 5179 (66%)
- Remaining commuters do not commute to the Chattanooga MSA

The following table contains the vehicle miles traveled (thousand miles) for the counties in the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 VMT (thousand miles/year)
Hamilton	3,743
Walker	742
Marion	654
Catoosa	810
Dade	512
Roane	784
Jackson, AL	786
Floyd, GA	948
McMinn	787
Whitfield, GA	1423

Based on the analysis for this factor the VMT for all MSA counties indicate a potential to contribute. Although Whitfield County has a relatively high VMT, none of the commuters go to the Chattanooga MSA.

Factor 5: Population Growth

The following table has the population and population growth figures for the Chattanooga MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 Population	Growth (90-00)	% Growth (90-00)
Hamilton	309,321	22360	8
Walker	61,949	2713	5
Marion	27,654	2916	12
Catoosa	56,341	10818	25
Dade	15,615	2007	15
Roane	52,316	4683	10
Jackson, AL	54,035	6130	13
Floyd, GA	92,606	9314	11
McMinn	50,051	6632	16
Whitfield, GA	87,037	11063	15

Based on the analysis for this factor, there appears to be significant growth on a percentage basis in Catoosa County that indicates a contribution to the air quality in the Chattanooga MSA.

Factor 6: Meteorology

This factor did not play a significant role in the decision making process.

Factor 7: Geography/topography

The Chattanooga area does not have any geographical or topographical boundaries limiting its airshed.

Factor 8: Jurisdictional boundaries

Hamilton and Meigs Counties, TN and Catoosa County, GA were designated nonattainment for the 8-hour ozone standard on April 15, 2004.

This factor did not play a significant role in the decision making process.

Factor 9: Level of control of emission sources

Sources in the Chattanooga area are subject to Prevention of Significant Deterioration (PSD) requirements, Control Technology Guidelines Reasonable Available Control Technology (CTG RACT) - (Hamilton County only), Maximum Achievable Control Technology (MACT) for Hazardous Air Pollutants (HAP), New Source Performance Standards (NSPS), and the NO_x SIP call.

This factor did not play a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendation on June 29, 2004 included Marion County, TN as part of the Chattanooga nonattainment area. Upon further analysis, including the review of additional material submitted by the state, EPA is revising its recommendation and designating Marion County as attainment/unclassifiable.

Marion County, TN

Marion County has a small population (27,654) and population density (55 people/mile²). There are no large point sources and the County only contributes 17.2 percent of the total MSA PM2.5 emissions (679 tpy), 7.1 percent of the total SO2 emissions (477 tpy), and 10.0 percent of the total NOx emissions (3156 tpy). In addition, the topography analysis indicates that the Lookout Mountain Ridge (2100 feet) separates the Marion County emissions from the violating monitors. The County is located to the west of the ridge while the violating monitors reside to the east of the ridge.

McMinn County, TN

See the McMinn County Section in the Knoxville, TN TSD.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as nonattainment for the Chattanooga, TN-GA area: Hamilton.

6.4.6.2 Knoxville Area

The Knoxville, TN MSA contains the counties of Anderson, Blount, Knox, Loudon, Sevier and Union. Based on air quality data for 2001-2003 the following MSA counties contain PM2.5 ambient air monitors (Design values are included in parenthesis): Knox County (16.8), Blount County (14.4), and Loudon County (15.4). Two adjacent Tennessee counties also contain PM2.5 monitors: Roane County (14.2), and McMinn County (14.6).

In a February 12, 2004 letter, the State recommended that Knox, Roane, and McMinn Counties be designated nonattainment based on 2000-2002 monitoring data. The State revised its recommendation on May 7, 2004, to recommend that McMinn and Roane Counties be designated attainment due to 2001-2003 data. Therefore, the State's current recommendation for the Knoxville MSA PM2.5 nonattainment area only includes Knox County and recommends that all other MSA and adjacent counties be designated attainment. The State submitted some justification for this recommendation, however, they indicated that the detailed emission information would be provided at a later date. Union County has very small amounts of PM2.5 and precursor emissions, indicating no contribution. Therefore, EPA agrees that Union County should be designated attainment/unclassifiable. Roane and McMinn, counties adjacent to the MSA, currently contain attaining ambient air monitors, however, Roane and McMinn counties have significant SO2 and NOx emissions which contribute to the violations. EPA is modifying the State's recommendation and will review the additional information during the 120 day period following the notification letter.

We have included in our recommended nonattainment area Roane County that is adjacent to the Knoxville MSA with a violating monitor, that is generally rural in character, and that contains an identifiable large emitting facility or facilities (e.g., power plants) which we believe contributes to the nearby nonattainment problem. We have included this county in our initial recommendations in order to ensure that a sufficient portion of the county, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of this adjacent county, encompassing the large facility or facilities, should be designated nonattainment.

Based on EPA's analysis of the available information, EPA is modifying the recommended nonattainment area to include all of the MSA counties, except Union, and the adjacent counties of Roane and McMinn.

Area	EPA Recommendation	State Recommendation
Knoxville, TN	Full counties: Anderson, Blount, Knox, Loudon, Sevier, Roane, and McMinn	Full counties: Knox

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The following table contains the 2001 PM_{2.5}, SO_x, NO_x, VOC, and ammonia emissions in tons per year and weighted emissions scores for the counties in the Knoxville MSA and some adjacent counties. (MSA counties are in bold.)

County	PM	SO _x	NO _x	VOC	Amm	Weighted Emissions Score	Cumulative Weighted Emissions Score

Knox	1995	3005	23648	29966	1220	28.6	28.6
Anderson	2891	45986	23020	5328	265	27.5	56.1
Blount	3535	2999	5282	8250	606	22.4	78.5
Sevier	711	433	2838	4756	472	9.4	87.9
Loudon	804	4035	5899	5338	360	8.8	96.7
Union	325	156	1057	1067	184	3.2	99.9
Roane	4967	92,331	30865	4300	285	38.0	
McMinn	3348	10216	10829	5546	1268	27.0	
Rhea	1405	302	2625	3643	149	18.1	
Haywood, NC	1218	8701	8669	4923	547	14.8	
Jefferson	1407	183	3220	4194	662	14.4	
Scott	1113	122	1338	1813	294	11.1	
Monroe	743	154	2387	3420	554	9.6	
Cumberland	682	181	3682	3989	532	8.6	
Whitley, KY	521	675	3646	3017	171	8.1	
Campbell	527	268	3323	3323	161	7.5	
Claiborne	509	165	1420	2554	475	6.0	
McCreary, KY	346	188	1414	904	52	5.8	
Cocke	400	247	2507	2361	357	5.5	
Swain, NC	12.93 28	141	567	1210	199	5.3	
Morgan	288	98	1252	929	222	4.3	
Graham, NC	209	70	377	981	47	3.2	
Grainger	288	80	893	1647	287	3.2	
Meigs	198	112	885	871	118	2.4	

Based on the analysis of emissions, there appears to be very small emissions in Union County for all the relevant pollutants. The other counties in the MSA and the counties of McMinn and Roane have significant emissions of some or all of the relevant pollutants, indicating contribution to the violations.

Factor 2: Air quality in potentially included versus excluded areas

The following table contains the 2001-2003 PM_{2.5} Design Values for all Knoxville MSA Counties and adjacent counties. (MSA counties are in bold.)

County	2001-2003 design value
Knox	16.8
Blount	14.4
Loudon	15.4 *
Roane	14.2
McMinn	14.6
Haywood, NC	13.6
Swain, NC	12.9

* Incomplete data that is not sufficient to determine attainment/nonattainment. Data substitution does not apply.

There are two monitors in the MSA that are violating and one MSA monitor (Blount County) that is attaining. The four monitors in adjacent counties are attaining.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table contains the populations for the counties in the Knoxville MSA and some adjacent counties with significant weighted emissions scores. (MSA counties are in bold.)

County	2002 Population	Percent of MSA Population (2002)	Population Density (People/ mile ²)
Knox	389327	55.3	765
Anderson	71627	10.2	212
Blount	109849	15.6	197
Sevier	74456	10.6	126
Loudon	40631	5.8	177
Union	18541	2.6	83
Roane	52316		145
McMinn	50051		116

Based on the analysis for this factor, there appears to be population sufficient to indicate a contribution by Knox, Anderson, Blount, and Sevier Counties and the adjacent counties of Roane and McMinn. Union County has very low population and population density supporting an attainment/unclassifiable designation.

Factor 4: Traffic and commuting patterns

Commuting Information - Following is an analysis of the commuting in the Knoxville MSA. Knox County has the most commuters of any of the MSA counties. As described below, 86 % of the Knox County commuters remain in Knox County, contributing 79 % of the commuting in Knox County. People from Blount and Anderson Counties commute to Knox County contributing approximately 7% and 4 %, respectively, with the remaining MSA counties contributing 3 % or less. Union County has the smallest number of commuters and the least contribution to the Knox County monitor.

Knox County, the core MSA county, has a total of 184,824 commuters.

- Commuters who remain in Knox County: 158,292

Anderson County, an MSA county has a total of 30,688 commuters

- Commuters that remain in Anderson County: 20,029
- Commuters from Anderson County to Knox County: 8,115

Blount County, an MSA county, has a total of 49,250 commuters

- Commuters that remain in Blount County: 31,298
- Commuters from Blount County to Knox County: 13,611

Loudon County, an MSA county, has a total of 17,671 commuters.

- Commuters who remain in Loudon County: 8,951
- Commuters from Loudon County to Knox County: 4,580

Sevier County, an MSA county, has a total of 34,389 commuters

- Commuters who remain in Sevier County: 25,388
- Commuters from Sevier County to Knox County: 6,522

Union County, an MSA county, has a total of 7,302 commuters

- Commuters who remain in Union County: 2,573
- Commuters from Union County to Knox County: 3,873

The following table contains the vehicle miles traveled (thousands of miles) for the counties in the Knoxville MSA and some adjacent counties.

County	2000 VMT (thousand miles/year)
Knox	5135
Anderson	875
Blount	1205
Sevier	724
Loudon	728
Union	126
Roane	784
McMinn	787

Knox and Blount counties contain 58 % and 14 % of the VMT of the MSA VMT, respectively. The remaining counties contribute less than 10 % each of the MSA VMT with Union County contributing 1 %. The small contribution from Union County supports an attainment/unclassifiable designation. The adjacent counties each contribute an amount equivalent to 9 % of the total MSA VMT. (The VMT from the adjacent counties was not used to calculate the total MSA VMT.)

Factor 5: Expected growth

The following table has the population and population growth figures for the Knoxville MSA counties and some adjacent counties with significant weighted emissions scores.

County	2002 Population	Growth (90-00)	% Change (90-00)
Knox	389327	46283	14
Anderson	71627	3080	5
Blount	109849	19854	23
Sevier	74456	20127	39
Loudon	40631	7831	25
Union	18541	4114	30
Roane	52316	4683	10
McMinn	50051	6632	16

The population growth has been relatively high for all of the MSA counties on a percentage basis, except Anderson, indicating potential contribution to the particulate matter levels in the MSA. Anderson County contributed only 3 % of the MSA growth. Although the percent growth in Union County was 30 %, its contribution to the MSA growth was only 4 %. McMinn and Roane Counties (adjacent) have a percent growth of 16 % and 10 %, respectively.

Factor 6: Meteorology

This factor did not play a significant role in the decision making process.

Factor 7: Geography/topography

This factor did not play a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

Knox, Anderson, Blount, Jefferson, Loudon, Sevier Counties and a portion of Cocke County were designated nonattainment for the 8-hour ozone standard.

This factor did not play a significant role in the decision making process.

Factor 9: Level of control of emission sources

Anderson, Blount, Jefferson, Loudon, Sevier- Subject to Prevention of Significant Deterioration (PSD) requirements, Control Technology Guidelines Reasonable Available Control Technology (CTG RACT, Maximum Achievable Control Technology (MACT) for Hazardous Air Pollutants (HAP), New Source Performance Standards (NSPS)

This factor did not play a significant role in the decision making process.

Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

EPA's initial nonattainment recommendation on June 29, 2004 included McMinn, Roane, and Sevier Counties, TN as part of the Chattanooga nonattainment area. Upon further analysis, including the review of additional material submitted by the state, EPA is revising its recommendation and designating McMinn County as unclassifiable and Sevier County as attainment/unclassifiable. EPA is designating a portion of Roane County that encompasses the TVA Kingston power plant as nonattainment. The remainder of Roane County will be designated as attainment/unclassifiable.

McMinn County, TN

The McMinn County emissions, represented in the table below, indicate that the county does not contribute to the violations in Knoxville. The county is located outside of the Metropolitan Statistical Area, has a small population (50,051), and low population density (116 people/mile²). McMinn County and the State of Tennessee submitted additional information, correcting the emissions for Bowater Newsprint and for McMinn County. The corrected emissions data for McMinn County emissions are represented in tons per year in the following table:

County	PM 2.5	SO ₂	NO _x	VOC	Ammonia
McMinn	1479	5775	10701	5004	1250

Based on incomplete monitoring data and data substitution not being a viable alternative, EPA has changed its June 2004 recommendation of nonattainment and is designating McMinn County unclassifiable. The county had monitoring data for 2000-2002 that was violating and has incomplete data for 2001-2003. Applying the data substitution policy will not confirm attainment.

Sevier County, TN

Sevier County has low emissions. The data indicate that the county only contributes 7.0 percent of the total MSA PM_{2.5} emissions (711 tpy), 0.8 percent of the total SO₂ emissions (433 tpy), and 4.6 percent of the total NO_x emissions (2838 tpy). The County is located within the Metropolitan Statistical Area, however it has a small population (74,456), 10.6 percent of the MSA population. Additionally, the County has a population density of 126 people/mile² which is low compared to Knox County that has a population density of 765 people/mile².

Roane County, TN

In the June 29, 2004, letters from EPA to the States responding to their designation recommendations, EPA recommended the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would encompass the relevant power plant to include it in the nonattainment area. Roane County, Tennessee is one of those counties. Roane County has low population (52,316 compared to 389,327 in Knox County, the predominant county in the Knoxville MSA), low population density (145 people per square mile compared to 765 in Knox County), low VMT (784,000 miles compared to 5,135,000 in Knox County), and the only large point source is the Kingston Fossil Plant. Additionally, Roane County has a monitor that is indicating attainment with a design value of 14.2 (2001-2003).

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant. The State of Tennessee subsequently submitted a partial county recommendation that included the Kingston Fossil Plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not

be defined simply as the boundary of the facility. Therefore, EPA is designating the census block group identifier (StateFIPs-CoFIPs-Tract#-Block Group#) 47-145-0307-2 portion of Roane County as part of the Knoxville nonattainment area.

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following counties as nonattainment for the Knoxville, TN area: Anderson, Blount, Knox, Loudon, and Roane (Partial).

Based on the analysis EPA conducted as described in the June 29, 2004 letter, and review of additional information received after our initial analysis, EPA is designating the following county as unclassifiable for the McMinn County, TN area: McMinn.

6.5 Region 5 Nonattainment Areas

6.5.1 EPA 9-Factor Analyses for Illinois for Designation of PM_{2.5} Nonattainment Areas

The following table identifies the individual areas and counties comprising those areas in Illinois that EPA is designating as nonattainment for the fine particulate matter ("PM_{2.5}") air quality standard. Where EPA is including only part of a county in a nonattainment area, we have indicated the boundaries of the portion of the county that will be included. Following this table is a description of the data EPA examined and a discussion of each area and the basis for EPA's designations. EPA is designating as attainment/unclassifiable all other Illinois counties or parts thereof not identified in the table below.

Area	Illinois Counties in Metropolitan Area	Illinois Recommended Nonattainment Counties	Counties EPA is Designating Nonattainment
Chicago-Gary-Kenosha, IL-IN-WI	Cook Du Page Kane Lake Mc Henry Will Grundy Kendall De Kalb Kankakee	Cook Du Page Kane Lake Mc Henry Will Grundy: Aux Sable Township Goose Lake Township Kendall: Oswego Township	Cook Du Page Kane Lake Mc Henry Will Grundy: Aux Sable Township Goose Lake Township Kendall: Oswego Township
Saint Louis, MO-IL	Madison Monroe St Clair Clinton Jersey	Madison Monroe St Clair	Madison Monroe St Clair Randolph: Baldwin Township

6.5.1.1 Chicago-Gary-Kenosha Area

Discussion:

EPA reviewed the nine factors for the thirteen counties within the metropolitan area (including ten counties in Illinois) as well as all counties adjacent to the metropolitan area in order to determine the appropriate nonattainment area. There are violating monitors in Cook County and in Lake County, Indiana. EPA agrees with the Illinois EPA to include Cook, Du Page, Kane, Lake, Mc Henry, and Will counties, Aux Sable and Goose Lake Townships in Grundy County, and Oswego Township in Kendall County in the Chicago nonattainment area. The bulk of emissions and population are captured without including DeKalb, Grundy, Kankakee and Kendall Counties, since these counties have limited emissions and population. Nevertheless, we support the recommendation by the Illinois EPA to include the three townships in Grundy and Kendall counties in the nonattainment area to maintain consistency with the ozone designations and thereby facilitate planning.

There are eight Illinois counties adjacent to the metropolitan area, including Boone, Ford, Iroquois, LaSalle, Lee, Livingston, Ogle, and Winnebago Counties. Emissions are relatively low for these counties, and no other factor warranted designating these counties nonattainment. Therefore, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

County	SO ₂	NO _x	Carbon	Crustal	Composite emissions score
Cook	61,676	195,428	10,110	8,268	33.0
De Kalb	445	4,885	384	1,875	1.0
Du Page	2,990	29,479	1,731	1,229	4.9
Grundey	6,149	9,589	563	1,235	2.1
Kane	1,395	9,490	1,047	2,326	2.8
Kankakee	551	6,628	490	1,720	1.4
Kendall	292	2,941	265	961	0.7
Lake	14,223	24,488	2,092	1,777	6.7
Mc Henry	637	5,834	564	1,992	1.6
Will	80,847	37,518	1,447	4,120	11.7
Lake, IN	50,110	72,142	5,708	7,588	19.5
Porter, IN	21,601	41,315	2,702	5,587	9.2
Kenosha, WI	33,122	27,469	770	1,236	5.4
Boone	849	2,188	215	834	0.6
Ford	219	1,462	216	1,280	0.6
Iroquois	458	4,177	452	2,290	1.3
La Salle	2,140	13,984	845	3,352	2.5
Lee	3,978	4,793	345	1,722	1.3
Livingston	503	4,686	485	2,413	1.3
Ogle	672	4,985	335	1,536	1.1
Winnebago	1,100	10,496	656	1,405	1.9
Benton, IN	101	1,326	215	724	0.5
Berrien, IN	1,390	10,269	740	1,340	0.6

Jasper, IN	34,435	23,020	668	1,838	5.2
La Porte, IN	10,974	19,681	826	1,643	3.3
Newton, IN	89	1,321	160	642	0.4
Pulaski, IN	111	1,187	196	667	0.5
St Joseph, IN	2,850	13,690	1,482	1,825	4.0
Starke, IN	100	2,852	188	551	0.5
White, IN	188	2,495	292	1,185	0.8
Racine, WI	2,309	7,252	662	890	1.9
Walworth, WI	866	5,693	470	908	1.3

Urban increment:

Total mass= 3.6 $\mu\text{g}/\text{m}^3$

25% sulfates; 8% nitrates; 65% carbon; 2% crustal.

Urban site= 170310076;

Rural site= BOND1 (Bondville)

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Cook	17.3 $\mu\text{g}/\text{m}^3$
Du Page	14.4 $\mu\text{g}/\text{m}^3$
Kane	14.2 $\mu\text{g}/\text{m}^3$
Lake	12.8 $\mu\text{g}/\text{m}^3$
Mc Henry	12.7 $\mu\text{g}/\text{m}^3$
Will	12.8 $\mu\text{g}/\text{m}^3$
Lake, IN	15.2 $\mu\text{g}/\text{m}^3$
Porter, IN	13.8 $\mu\text{g}/\text{m}^3$
Kenosha, WI	11.7 $\mu\text{g}/\text{m}^3$
La Porte	13.6 $\mu\text{g}/\text{m}^3$
La Salle	14.1 $\mu\text{g}/\text{m}^3$
Winnebago	13.6 $\mu\text{g}/\text{m}^3$
St Joseph, IN	14.3 $\mu\text{g}/\text{m}^3$
Berrien, MI	12.7 $\mu\text{g}/\text{m}^3$

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

County	2003 Population	Population Density
Cook	5,377,507	5,684
De Kalb	91,561	144
Du Page	924,589	2,768
Grundy	38,839	92
Kane	443,041	850
Kankakee	104,657	154
Kendall	61,222	191
Lake	674,850	1,506
Mc Henry	277,710	460
Will	559,861	669
Lake, IN	487,016	980
Porter, IN	150,403	360
Kenosha, WI	154,433	566

Factor 4: Traffic and commuting patterns

County	County VMT	Percent	Number
Cook	44,107,000	12	274,167
De Kalb	729,000	31	13,894
Du Page	6,609,000	40	186,686
Grundy	530,000	46	8,431
Kane	841,000	43	82,968
Kankakee	889,000	19	9,122
Kendall	278,000	67	19,070
Lake	3,549,000	32	100,810
Mc Henry	792,000	47	62,415
Will	2,136,000	55	131,834
Lake, IN	5,012,000	25	52,922
Porter, IN	1,680,000	36	25,819

Kenosha, WI	1,228,000	28	20,506
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Factor 5: Expected growth

County	Percent growth 1990-2000
Cook	5
De Kalb	14
Du Page	16
Grundy	16
Kane	27
Kankakee	8
Kendall	38
Lake	25
Mc Henry	42
Will	41
Lake, IN	2
Porter, IN	14
Kenosha, WI	17

Factor 6: Meteorology

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Cook	26	37	16	21
De Kalb	27	34	19	21
Du Page	26	37	17	21
Grundy	26	36	17	21
Kane	26	35	18	21
Kankakee	25	38	17	19
Kendall	26	36	17	21
Lake	26	37	17	20
Mc Henry	28	32	19	20
Will	26	37	17	21

Lake, IN	25	38	17	19
Porter, IN	25	38	18	19
Kenosha, WI	28	35	18	20

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Illinois has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

The Chicago Area Transportation Study (CATS) Policy Committee is the Metropolitan Planning Organization (MPO) for the northeastern Illinois region.

-source: CATS web page, <http://www.catsmpo.com/>

The Illinois portion of the Chicago ozone nonattainment area consists of the following counties: Cook, Du Page, Kane, Lake, Mc Henry, Will, Aux Sable and Goose Lake Townships in Grundy County, and Oswego Township in Kendall County.

Factor 9: Level of control of emission sources

The state provided no information about the level of control of emission sources for this area.

6.5.1.2 Saint Louis Area

Discussion:

EPA reviewed the nine factors for the counties within the metropolitan area as well as counties adjacent to the metropolitan area in order to determine the appropriate nonattainment area. There are violating monitors in Madison and St. Clair counties as well as in the City of Saint Louis. EPA agrees with the Illinois EPA to include Madison, Monroe and St. Clair counties in the Illinois portion of the St. Louis nonattainment area.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

Illinois recommended a designation of unclassified for a portion of Randolph County, specifically Baldwin Township, which contains the Baldwin power plant. EPA is designating Baldwin Township in Randolph County nonattainment as part of the Saint Louis nonattainment area. EPA notes that the Baldwin plant has recently reduced its emissions significantly. The Illinois submission did not indicate whether these emission reductions are enforceable or how much potential exists for further emission reductions at this facility such as annual operation of its NO_x emission controls. Randolph County adjoins a county that is monitoring a violation of the standard, and the most significant emissions are located in Baldwin Township, the portion of the county closest to the violation. These emissions are located where winds would commonly blow the emissions toward the observed violations. Emissions are moderately high even after the recent reductions. EPA concludes that these emissions are sufficient to contribute to violations in the Saint Louis area.

There are 11 other Illinois counties adjacent to the Metropolitan Area, namely Bond, Calhoun, Fayette, Greene, Macoupin, Marion, Montgomery, Morgan, Pike, Sangamon, and Washington Counties. Emissions for these counties are relatively low and no other factor warranted designating the adjacent counties nonattainment. Therefore, the following data summaries for factors 3 through 9 do not address these counties.

Besides Randolph County, Illinois also recommended a designation of unclassifiable for Jersey County, and recommended attainment for all other counties in the state that are not part of the recommended Saint Louis or Chicago nonattainment areas. EPA is designating as attainment/unclassifiable all counties that are not part of the Saint Louis or Chicago nonattainment areas.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

County	SO ₂	NO _x	Carbon	Crustal	Composite emissions score
Clinton	624	3,717	238	1,067	2.0
Jersey	246	1,755	165	544	1.2
Madison	69,938	37,593	1,563	4,425	16.8
Monroe	244	2,489	206	647	1.6
St Clair	4,471	11,813	863	1,996	6.8
Franklin, MO	45,216	15,482	918	2,864	9.1
Jefferson, MO	52,671	13,612	1,160	3,291	10.4
Lincoln, MO	221	2,935	273	1,358	2.1
St Charles, MO	40,596	25,793	896	2,415	10.2
St Louis, MO	30,400	53,358	3,456	2,897	27.4
Warren, MO	324	1,803	205	674	1.5
St Louis (City), MO	14,647	27,193	1,214	958	11.0
Bond	177	1,883	137	628	1.1
Calhoun	192	1,162	88	170	0.7
Fayette	290	2,795	223	786	1.7
Greene	196	1,409	159	771	1.2
Macoupin	281	3,123	344	1,415	2.5

Marion	297	3,879	290	891	2.3
Montgomery	38,079	18,254	625	2,230	7.6
Morgan	24,066	6,713	500	1,725	4.7
Pike	6,252	4,850	259	901	2.4
Randolph	23,984	33,023	559	1,863	8.9
Sangamon	16,411	19,811	900	2,742	8.7
Washington	167	2,045	199	814	1.5
Crawford, MO	110	2,199	183	396	1.4
Dent, MO	100	521	121	431	0.8
Gasconade, MO	248	1,727	132	393	1.0
Iron, MO	34,225	1,851	140	291	2.1
Madison, MO	47	727	86	143	0.6
Montgomery, MO	364	1,740	145	719	1.2
Perry, MO	349	2,776	218	531	1.7
Phelps, MO	754	2,990	244	645	1.9
Pike, MO	15,205	10,931	206	773	3.3
St Francois, MO	697	4,204	328	825	2.5
Ste Genevieve, MO	3,666	7,315	255	940	2.7
Washington, MO	152	1,161	137	322	1.0

Urban increment:

Total mass= 6.2 $\mu\text{g}/\text{m}^3$

8% sulfates; 29% nitrates; 58% carbon; 5% crustal.

Urban site= 295100085;

Rural site= MING1 (Mingo)

According to information provided in Illinois' submittal of September 1, 2004, the Baldwin Plant in Baldwin Township represents approximately 96% of the SO_x emissions and 86% of the NO_x emissions for Randolph County. Therefore, designating Baldwin Township as nonattainment will capture the bulk of emissions from Randolph County.

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Madison	17.5 $\mu\text{g}/\text{m}^3$
St Clair	16.2 $\mu\text{g}/\text{m}^3$
Jefferson, MO	14.5 $\mu\text{g}/\text{m}^3$
St Charles, MO	14.3 $\mu\text{g}/\text{m}^3$
St Louis, MO	14.0 $\mu\text{g}/\text{m}^3$
St Louis (City), MO	15.2 $\mu\text{g}/\text{m}^3$
Randolph	12.4 $\mu\text{g}/\text{m}^3$

Sangamon	13.3 µg/m ³
Ste Genevieve, MO	13.6 µg/m ³

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

County	2003 Population	Population Density
Clinton	35,855	76
Jersey	21,858	59
Madison	261,409	361
Monroe	29,058	75
St Clair	257,904	388
Franklin, MO	95,890	104
Jefferson, MO	203,993	310
Lincoln, MO	42,280	67
St Charles, MO	303,030	540
St Louis, MO	1,018,102	2,004
Warren, MO	26,193	61
St Louis (City), MO	338,353	5,457
Randolph	33,641	58

Factor 4: Traffic and commuting patterns

County	County VMT	Percent	Number
Clinton	375,000	35	5,915
Jersey	196,000	51	5,259
Madison	2,768,000	35	43,125
Monroe	264,000	57	8,172
St Clair	2,857,000	36	40,389
Franklin, MO	1,391,000	36	16,422
Jefferson, MO	2,511,000	63	61,991
Lincoln, MO	493,000	52	9,622
St Charles, MO	2,738,000	52	77,347
St Louis, MO	11,553,000	27	134,153
Warren, MO	348,000	54	6,414
St Louis (City), MO	4,178,000	40	56,734
Randolph	278,000	20	2,798

Factor 5: Expected growth

County	Percent growth 1990-2000
Clinton	5
Jersey	5
Madison	4
Monroe	23
St Clair	-3
Franklin, MO	16

Jefferson, MO	16
Lincoln, MO	35
St Charles, MO	33
St Louis, MO	2
Warren, MO	26
St Louis (City), MO	-12
Randolph	-2

Factor 6: Meteorology

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Clinton	28	29	29	15
Jersey	28	28	29	15
Madison	28	28	29	15
Monroe	28	28	29	15
St Clair	28	28	29	15
Franklin, MO	27	27	31	15
Jefferson, MO	28	27	31	15
Lincoln, MO	27	27	31	15
St Charles, MO	29	27	30	15
St Louis, MO	29	27	30	15
Warren, MO	27	27	31	16
St Louis (City), MO	29	27	30	15
Randolph	28	28	29	15

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Illinois has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

The East-West Gateway Council of Governments (EWGCC) is the Metropolitan Planning Organization (MPO) for the bi-state St. Louis area.

-source: EWGCC web page, <http://www.ewgateway.org/>

The Illinois portion of the Saint Louis ozone nonattainment area consists of the following counties: Jersey, Madison, Monroe, and St. Clair.

Factor 9: Level of control of emission sources

The State has provided no information about the level of control of emission sources for this area. Although EPA is aware that the Baldwin Generating Station is purchasing low sulfur coal and has installed NOx emission controls on some of its units, EPA does not

have information as to the permanence of those reductions and whether the NO_x emission controls are operated on an annual basis.

6.5.2 EPA 9-Factor Analyses for Indiana for Designation of PM_{2.5} Nonattainment Areas

The following table identifies the individual areas and counties comprising those areas in Indiana that EPA is designating as nonattainment for the fine particulate matter ("PM_{2.5}") air quality standard. Following this table is 1) discussion of the general issue of the size of nonattainment areas, 2) a description of the data EPA examined, and 3) a discussion of each area and the basis for EPA's designations. EPA is designating as attainment/unclassifiable all counties or portions of counties not identified in the table below, except that EPA is designating Delaware County in the Muncie area as unclassified because it has insufficient information to justify either a nonattainment or an attainment designation for this area.

Area	Indiana Counties in Metropolitan Area	Indiana Recommended Nonattainment Counties	Counties EPA is Designating Nonattainment
Chicago-Northwest Indiana	Lake Porter	Lake	Lake Porter
Cincinnati	Dearborn Ohio	None	Dearborn: Lawrenceburg Township
Elkhart	Elkhart	Elkhart	Elkhart Saint Joseph
Evansville	Vanderburgh Warrick Posey	Vanderburgh Dubois	Dubois Vanderburgh Warrick Gibson: Montgomery Township Pike: Washington Township Spencer: Ohio Township
Indianapolis	Boone Hamilton Hancock Hendricks Johnson Madison Marion Morgan Shelby	Marion	Hamilton Hendricks Johnson Marion Morgan

Louisville	Clark Floyd Harrison Scott	Clark	Clark Floyd Jefferson: Madison Township
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General Issue of Size of Nonattainment Areas

Indiana's recommendations for nonattainment areas included only counties that monitored nonattainment and did not include any additional counties that contributed to nonattainment. Indiana's submissions noted several areas where relatively nearby monitors showed differing concentrations, for example Lake County monitoring nonattainment and Porter County monitoring attainment. Indiana deduces from this that the impacts of emissions within an area added to large "background concentrations" arising from long range transport are very localized. Therefore, Indiana concludes, counties lacking a monitored violation may be considered not to contribute to monitored violations in other counties.

EPA's guidance recommends a presumption for nonattainment areas that include entire metropolitan areas, reflecting a presumption that violations in a metropolitan area reflect contributions from the entire area. EPA's guidance recognizes that violations of the PM_{2.5} standard reflect both regional scale impacts from contributions originating outside the metropolitan area and more local scale impacts. Indeed, the different components of PM_{2.5} have different ranges of impacts, with some components showing greatest impacts very close to the emissions sources, some components showing peak impacts at a moderate distance from the emissions (such as from rapid photochemical reactions), and some components showing similar impacts over distance ranges of hundreds of kilometers. Consequently, the existence of neighboring counties with somewhat different concentrations, like Lake County observing design values up to 15.2 µg/m³ versus the Porter County site having a design value of 13.8 µg/m³, does not signify that emissions in the county with lower concentrations fails to contribute to the higher concentrations in the neighboring county.

Further considerations apply to mobile sources. By definition, these sources can be associated with a residence or business in one county but emit PM_{2.5} and its precursors in another county. Some of the relevant control measures address the "home" of these vehicles. This consideration supports including counties that are the origin of sizable numbers of vehicles in the nonattainment area.

Indiana has not provided convincing evidence to rebut EPA's general presumption or the underlying view of the typical characteristics of the PM_{2.5} problem, nor has Indiana demonstrated that the presumption does not apply in any Indiana areas. Therefore, EPA is including the additional counties that it believes contribute to the observed violations in the nonattainment areas it is promulgating.

6.5.2.1 Chicago-Northwest Indiana Area

Discussion

The following is the nine-factor analysis for the Indiana portion of the Chicago-Northwest Indiana area including adjacent counties in Indiana. The Chicago-Gary-Kenosha Metropolitan Area includes 10 counties in Illinois, two in Indiana and one in Wisconsin. Indiana recommended that Lake County, which has a violating monitor, be designated as nonattainment for PM_{2.5}, and that Porter County, which has a monitor showing attainment, be designated as attainment/unclassified. However, EPA is designating both Lake and Porter Counties as nonattainment.

Lake and Porter Counties both have high composite emissions scores. Although Porter County has a monitor which shows attainment, its emissions contribute to over 9% of the Chicago area composite emissions score largely as a result of significant power plant coal combustion and steel mill emissions as well as some emissions from mobile sources and other sources. The composite emissions scores from the adjacent counties are all modest. La Porte County, adjacent to the metropolitan area, is monitoring attainment of the annual PM_{2.5} standard and is judged not to contribute to nonattainment in the Chicago-Northwest Indiana area.

In addition, Porter has a sizeable population with over 150,000 residents, and over 21,000 workers travel into Lake County on a daily basis, thereby contributing to Lake County monitored PM levels. There is limited commuting from Jasper, La Porte, and Newton Counties into the metropolitan area. Lake County experienced very little growth from 1990 to 2000. During this time, Porter County added nearly 18,000 people. Jasper County growth rate was high, but even with the increase of 5,000 people, its population is still quite small for the area.

EPA considered the emissions, population, and vehicle miles traveled (VMT) from Newton, Jasper, and La Porte Counties, which are adjacent to Lake and Porter Counties. Based upon the emissions, populations, and VMT, EPA is designating these three counties as attainment/unclassified.

Other factors EPA reviewed are meteorology, geography, jurisdictional boundaries, and emission controls. The wind data presented below shows no dominant wind direction for Northwest Indiana. There are no geographical features in this area that would effect the distribution of PM_{2.5}. Lake and Porter Counties are both included in the Chicago ozone nonattainment area. La Porte County is in a separate ozone nonattainment area. All three counties make up the area's metropolitan planning organization. The state has not submitted any information on emission controls in Northwest Indiana.

Factor 1: Emissions

County	SO ₂	NO _x	Carbon	Crustal	Composite emissions score
Lake, IN	50,110	72,142	5,708	7,588	19.5
Porter, IN	21,601	41,315	2,702	5,587	9.2
Cook, IL	61,676	195,428	10,110	8,268	33.0
De Kalb, IL	445	4,885	384	1,875	1.1
Du Page, IL	2,990	29,479	1,731	1,229	4.9
Grundy, IL	6,149	9,589	563	1,235	2.1
Kane, IL	1,395	9,490	1,047	2,326	2.8
Kankakee, IL	551	6,628	490	1,720	1.4
Kendall, IL	292	2,941	265	961	0.7
Lake, IL	14,223	24,488	2,092	1,777	6.7
McHenry, IL	637	5,834	564	1,992	1.6
Will, IL	80,847	37,518	1,447	4,120	11.7
Kenosha, WI	33,122	27,469	770	1,236	5.4
Benton	101	1,326	215	724	0.6
Jasper	34,435	23,020	668	1,838	5.2
La Porte	10,974	19,681	826	1,643	3.3
Newton	89	1,321	160	642	0.4
Pulaski	111	1,187	196	667	0.5
Starke	100	2,852	188	551	0.5
White	188	2,495	292	1,185	0.8
Boone, IL	849	2,188	215	834	0.6
Ford, IL	219	1,462	216	1,280	0.6
Iroquois, IL	458	4,177	452	2,290	1.3
La Salle, IL	2,140	13,984	845	3,352	2.5
Lee, IL	3,978	4,793	345	1,722	1.3
Livingston, IL	503	4,686	485	2,413	1.3
Ogle, IL	672	4,985	335	1,536	1.1
Winnebago, IL	1,100	10,496	656	1,405	1.9

Racine, WI	2,309	7,252	662	890	1.9
Walworth, WI	866	5,693	470	908	1.3

All emissions are from the 2001 NEI and are in tons. Metropolitan area counties are shown in bold.

Speciation profile for Chicago: 25% Sulfates, 8% Nitrates, 65% Carbon, and 2% Crustal derived by comparing data from site number 170310076 in Chicago against data from the Bondville monitor.

Factor 2: Air quality

County	2001-03 Design Value
Lake, IN	15.2 µg/m ³
Porter, IN	13.8 µg/m ³
Cook, IL	17.3 µg/m ³
Du Page, IL	14.4 µg/m ³
Kane, IL	14.2 µg/m ³
Lake, IL	12.8 µg/m ³
McHenry, IL	12.7 µg/m ³
Will, IL	14.7 µg/m ³
Kenosha, WI	11.7 µg/m ³
La Porte, IN	13.6 µg/m ³

Metropolitan area counties are shown in bold.

Jasper and Newton Counties do not have monitors.

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Lake, IN	487,016	980
Porter, IN	150,403	360
Cook, IL	5,377,507	5684
De Kalb, IL	91,561	144
Du Page, IL	924,589	2768
Grundy, IL	38,839	92

Kane, IL	443,041	850
Kankakee, IL	104,657	154
Kendall, IL	61,222	191
Lake, IL	674,850	1506
Mc Henry, IL	277,710	460
Will, IL	559,861	669
Kenosha, WI	154,433	566
Jasper	30,815	55
La Porte	110,384	185

Metropolitan area counties are shown in bold.

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Lake, IN	5,012,000	1,235,000	25 %
Porter, IN	1,680,000	38,000	14 %
Cook, IL	44,107,000	12,254,000	28 %
De Kalb, IL	729,000	-176,000	-24 %
Du Page, IL	6,609,000	1,971,000	30 %
Grundy, IL	530,000	-175,000	-33 %
Kane, IL	841,000	309,000	37 %
Kankakee, IL	889,000	281,000	32 %
Kendall, IL	278,000	34,000	12 %
Lake, IL	3,549,000	1,479,000	42 %
Mc Henry, IL	792,000	234,000	29 %
Will, IL	2,136,000	240,000	11 %
Kenosha, WI	1,228,000	318,000	26 %
Jasper, IN	722,000	-261,000	-36 %
La Porte, IN	1,536,000	-343,000	-22 %

Metropolitan area counties are shown in bold.

Commuting Information:

	Porter	Jasper	La Porte	Illinois
Into Lake County	21,654	2,817	1,783	11,672
From Lake County	5,066	270	1,200	34,263

	Jasper	La Porte	Illinois
Into Porter County	988	4,238	524
From Porter County	363	3,390	5,273

Factor 5: Growth

County	% Population Change
Lake	2 %
Porter	14 %
Cook, IL	-2 %
De Kalb, IL	5 %
Du Page, IL	1 %
Grundy, IL	2 %
Kane, IL	4 %
Kankakee, IL	7 %
Kendall, IL	-8 %
Lake, IL	-1 %
Mc Henry, IL	8 %
Will, IL	9 %
Kenosha, WI	-1 %
Jasper	20 %
La Porte	3 %

Metropolitan area counties are shown in bold.

Factor 6: Meteorology

Year-round average wind direction for:

Lake County, Indiana: 25% NW, 38% SW, 17% SE, 19% NE;

Porter County: 25% NW, 38% SW, 18% SE, 19% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Lake and Porter Counties are both designated as nonattainment in the Chicago ozone nonattainment area. La Porte County is also designated as ozone nonattainment in its own area.

Northwestern Indiana Regional Planning Commission is the MPO for Lake (Indiana), La Porte, and Porter Counties.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in Northwest Indiana.

6.5.2.2 Cincinnati Area

Discussion

The Cincinnati Metropolitan Area includes five Ohio counties, six Kentucky counties, and two Indiana counties: Dearborn and Ohio. Indiana did not recommend either of their counties for nonattainment in the Cincinnati area. After considering all nine factors for both counties, EPA is designating Lawrenceburg Township in Dearborn County as nonattainment. All other Dearborn County townships are being designated as attainment/unclassified.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

Data are provided for full counties only. Dearborn County's main emissions sources including the Tanners Creek power plant are found in Lawrenceburg Township.

Dearborn County has significant emissions yielding a composite emissions score of 11.4. This score ranks third in the three State, 13 county metropolitan area. The wind, with a westerly component 63% of the time, commonly transports Dearborn County emissions east into the rest of the Cincinnati area.

Considering its modest population, a significant number of Dearborn County workers commute into the Ohio and Kentucky portions of the area. This shows that it is an integral part of the area. Dearborn County's Lawrenceburg Township is also included as a partial county in the Cincinnati ozone nonattainment area. The county is in Cincinnati's metropolitan planning organization as well.

Because emissions are relatively low for the counties adjacent to the metropolitan area, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not display these counties.

Indiana noted some further emission reductions at the Tanners Creek power plant in Lawrenceburg Township of Dearborn County. However, EPA determined that these reductions reduced the composite emission score only from 11.4 to 10.2. EPA thus continues to believe that Lawrenceburg Township of Dearborn County contributes to violations in the Cincinnati area.

Factor 1: Emissions

County	SO₂	NO_x	Carbon	Crustal	Composite emission score
Dearborn, IN	56,773	31,138	900	2,121	11.4
Ohio, IN	113	682	49	89	0.5
Boone, KY	14,717	15,794	721	1,068	7.7
Campbell, KY	860	5,294	285	260	2.8
Gallatin, KY	350	2,365	100	234	1.0
Grant, KY	210	2,664	182	191	1.8
Kenton, KY	1,573	8,365	415	301	4.2
Pendleton, KY	597	3,396	139	207	1.5
Brown, OH	395	2,927	208	520	2.0
Butler, OH	13,204	19,735	956	1,752	9.9
Clermont, OH	84,599	45,618	1,693	3,916	20.0
Hamilton, OH	88,053	58,398	2,780	3,873	30.3

Warren, OH	895	7,565	743	1,063	6.9
Decatur	154	2,525	190	717	1.8
Fayette	150	1,426	156	392	1.4
Franklin	92	1,335	143	341	1.3
Ripley	140	2,081	221	507	2.0
Rush	140	1,274	177	814	1.6
Switzerland	251	1,554	101	145	1.0
Union	58	548	68	272	0.6

All emissions are from the 2001 NEI and are in tons.

Speciation profile for Cincinnati: 7% Sulfates, 15% Nitrates, 78% Carbon, 0% Crustal based on a comparison of data from site number 211170007 against data from the Livonia monitor.

Factor 2: Air quality

There are no PM_{2.5} monitors in the Indiana portion of the Cincinnati area. The design value for the metropolitan area is 17.8 µg/m³ from Hamilton County, Ohio. The following are design values for Cincinnati area counties in Ohio and Kentucky with monitors.

County	2001-2003 Design Value
Butler, OH	16.2 µg/m³
Hamilton, OH	17.8 µg/m³
Campbell, KY	14.5 µg/m³
Kenton, KY	15.0 µg/m³
Preble, OH	13.5 µg/m ³

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Dearborn, IN	47,333	155
Ohio, IN	5,804	67

Boone, KY	93,290	379
Campbell, KY	88,604	583
Gallatin, KY	7,836	79
Grant, KY	23,620	91
Kenton, KY	152,164	934
Pendleton, KY	14,815	53
Brown, OH	43,464	88
Butler, OH	340,543	729
Clermont, OH	183,352	406
Hamilton, OH	833,721	2048
Warren, OH	175,133	438

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Dearborn	607,000	-55,000	-9 %
Ohio	56,000	64,000	114 %

Commuting Information:

	Ohio	Ripley	Hamilton, OH	Butler, OH	Boone, KY	Kenton, KY
Into Dearborn	906	1,082	1,335	163	350	244
From Dearborn	311	1,095	7,672	750	1,466	459

	Hamilton, OH	Boone, KY	Switzerland
Into Ohio County	87	25	393
From Ohio County	463	135	74

Factor 5: Growth

County	% Population Change
Dearborn	19%
Ohio	6%

Factor 6: Meteorology

Year-round average wind direction for Dearborn County, Indiana: 23% NW, 40% SW, 18% SE, 19% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Lawrenceburg Township in Dearborn County is designated nonattainment for ozone as part of the Cincinnati ozone nonattainment area. The rest of this county and Ohio County are designated as attainment/unclassified for ozone.

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) is the Metropolitan Planning Organization (MPO) for Butler, Warren, Clermont, and Hamilton Counties in Ohio; Campbell, Kenton, and Boone Counties in Kentucky; and Dearborn County, Indiana.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in this area.

6.5.2.3 Elkhart Area**Discussion**

The Elkhart, Indiana Metropolitan Area consists solely of Elkhart County, which has a violating monitor. As a result of the violating monitor, Indiana recommended that it be designated as nonattainment. EPA also considered the impact of the surrounding seven counties. These counties in Indiana include Saint Joseph, Kosciusko, Marshall, Noble, Lagrange Counties, which Indiana recommended be designated as attainment for PM_{2.5} and in Michigan include Saint Joseph and Cass Counties. Of the surrounding counties, EPA is designating Saint Joseph County, Indiana, as nonattainment and the remaining six counties as attainment/unclassified.

Over half of the composite emissions score for the eight counties is from Elkhart and Saint Joseph (Ind.) Counties. In fact, Saint Joseph County has the highest emissions score with emissions comparable to Elkhart County. In addition, Saint Joseph County has a large population with Elkhart County's population being slightly less. The vehicle miles traveled (VMT) was significant in both counties. There are a large number of Elkhart County workers commuting from Saint Joseph County. Although Saint Joseph

County has a monitor showing attainment, the particulate matter emissions from Saint Joseph County would reasonably be expected to contribute to concentrations in Elkhart County. This is because Saint Joseph County is directly west of Elkhart County and the winds are from the northwest or southwest 64% of the time. Elkhart and Saint Joseph Counties are designated as a single nonattainment for the ozone standard. Also, both counties are in the same metropolitan planning organization, the Michiana Area Council of Government. EPA is designating the remaining six counties as attainment/unclassified because they have much lower emissions, population, and VMT than Elkhart and Saint Joseph Counties.

Factor 1: Emissions

County	SO ₂	NO _x	Carbon	Crustal	Composite emission score
Elkhart	1,409	12,549	1,828	2,228	100.0
Kosciusko	428	5,387	679	1,682	36.5
Lagrange	809	3,259	326	755	28.8
Marshall	463	3,569	621	1,322	33.6
Noble	390	3,740	457	1,302	26.6
Saint Joseph	2,850	13,690	1,482	1,825	114.1
Cass, MI	325	2,080	263	814	17.1
St Joseph, MI	744	4,212	427	1,775	32.5

Speciation profile for Elkhart: 25% Sulfates, 8% Nitrates, 65% Carbon, and 2% Crustal based on a comparison of data from site 170310076 (in Chicago) against data from the Bondville monitor. Adequate speciation data were not available from Elkhart.

Factor 2: Air quality

County	2001-03 Design Value
Elkhart	15.2 µg/m ³
Saint Joseph	14.3 µg/m ³

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Elkhart	186,465	402
Saint Joseph	267,120	585

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Elkhart	2,087,000	615,000	29 %
Saint Joseph	2,304,000	1,037,000	45 %

Commuting Information:

29,756 people commuted into Elkhart County in 2002.

107,500 people lived and worked in Elkhart County in 2002.

	Saint Joseph
Into Elkhart County	10,850
From Elkhart County	3,722

Factor 5: Growth

County	% Growth 1990-2000
Elkhart	17 %
Saint Joseph	7 %

Factor 6: Meteorology

Year-round average wind direction for

Elkhart County: 25% NW, 39% SW, 19% SE, 16% NE;

Saint Joseph County: 25% NW, 39% SW, 20% SE, 16% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Elkhart and Saint Joseph counties are designated as a joint nonattainment area for the ozone air quality standard.

The Michiana Area Council of Government is the MPO for Elkhart and Saint Joseph Counties.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in the Elkhart area.

6.5.2.4 Southwest Indiana (Evansville Area)

Discussion:

The Evansville Metropolitan Area includes Warrick, Posey, and Vanderburgh Counties in Indiana and Henderson County in Kentucky. Dubois County is not part of a metropolitan area, according to 1999 Office of Management and Budget metropolitan area definitions. EPA also considered numerous other adjacent counties, particularly Gibson, Pike, and Spencer Counties. Both Vanderburgh and Dubois Counties have violating monitors and were recommended by Indiana to be designated as nonattainment for the PM_{2.5} standard. For the Evansville Area, EPA is designating a nonattainment area that includes Dubois, Vanderburgh, and Warrick Counties as well as portions of Gibson, Pike, and Spencer Counties.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, Montgomery Township in Gibson County, Washington Township in Pike County, and Ohio Township in Spencer County are partial county areas included in the Evansville nonattainment area.

Gibson, Spencer, Pike, and Warrick Counties have the highest emission levels in Southwest Indiana. Emissions of both direct PM_{2.5} and precursors are high for these counties, resulting in their high composite emission scores. Dubois and Vanderburgh Counties have design values exceeding the PM_{2.5} standard of 15.0 µg/m³, despite their more modest emissions. Spencer County, Indiana, and Daviess County, Kentucky are monitoring below the standard while the rest of the area including the adjacent counties have no monitors.

Vanderburgh County is home to a majority of the Evansville area population. Commuting patterns show a connection between Vanderburgh and Warrick Counties. Population growth was modest for all counties being considered.

Gibson and Pike Counties are located north of Vanderburgh County and west of Dubois County. Spencer and Warrick Counties are east of Vanderburgh County and south of Dubois County. The meteorological data presented under Factor 6 indicates no prevailing wind direction. The location of the area counties and the varied wind directions mean that Vanderburgh County or Dubois County will commonly be downwind from at least some of the high emissions sources in these counties.

EPA believes that the high emissions in several counties in the area contribute to the violations recorded in Vanderburgh and Dubois Counties. Gibson, Pike, Spencer, and Warrick Counties all contain power plants with significant emissions that contribute to the violations in Dubois and Vanderburgh Counties. The townships identified above include these power plants.

Factor 1: Emissions

County	SO₂	NO_x	Carbon	Crustal	Composite emission score
Posey	18,715	14,866	595	1,308	19.5
Vanderburgh	1,421	9,538	1,550	1,337	17.5
Warrick	102,206	28,647	1,655	4,940	52.3
Henderson, KY	6,308	8,075	418	971	10.7
Crawford	536	3,842	161	137	4.3
Daviess	328	1,542	179	621	24.2
Dubois	1,694	5,665	1,037	995	11.3
Gibson	148,808	46,937	1,767	6,093	76.3
Martin	110	797	193	252	1.9
Perry	789	3,102	195	257	4.0
Pike	63,626	28,567	745	2,209	39.4

Spencer	57,983	38,521	1,107	3,124	49.5
Webster, KY	19,201	15,934	551	2,035	20.8

All emissions are from the 2001 NEI and are in tons. Metropolitan area counties are shown in bold.

Speciation profile for Southwest Indiana: 20% Sulfates, 51% Nitrates, 23% Carbon, and 6% Crustal based on a comparison of data from site number 210590014 (in Owensboro) against data from the Mammoth Cave monitor.

The Indiana Power and Light Company Petersburg facility and the Hoosier Energy Ratts Station together represent approximately 99% of the SO₂, 96% of the NO_x, 83% of the carbonaceous particles and 88% of the crustal emissions for Pike County. Designating Washington Township as nonattainment captures these emissions and therefore the bulk of the emissions for Pike County. The Indiana Michigan Power Rockport facility and AK Steel Rockport Works together represent approximately 99% of the SO₂, 91% of the NO_x, 77% of the carbonaceous particles and 81% of the crustal emissions for Spencer County. Designating Ohio Township as nonattainment will capture the bulk of the emissions for Spencer County. The PSI Gibson facility represents approximately 99% of the Gibson County NO_x and SO₂ emissions. Montgomery Township is in the Evansville nonattainment area because it captures most of the Gibson County emissions.

Factor 2: Air quality

County	2001-03 Design Value
Vanderburgh	15.5 µg/m³
Henderson, KY	14.0 µg/m³
Dubois	16.2 µg/m ³
Spencer	14.4 µg/m ³
Daviess, KY	14.9 µg/m ³

There are no monitors in Gibson, Pike, Posey, or Warrick Counties.

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Posey	26,990	66
Vanderburgh	171,744	731
Warrick	53,624	140

Henderson, KY	44,995	102
Dubois	40,015	93
Gibson	32,590	67
Pike	12,908	38
Spencer	20,353	51

Metropolitan area counties are shown in bold.

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Posey	508,000	-63,000	-12 %
Vanderburgh	1,732,000	552,000	32 %
Warrick	828,000	-166,000	-20 %
Henderson, KY	510,000	271,000	53 %
Dubois	479,000	39,000	8 %
Gibson	429,000	70,000	17 %
Pike	178,000	104,000	58 %
Spencer	392,000	47,000	12 %

Metropolitan area counties are shown in bold.

Commuting Information:

29,553 people commuted into Vanderburgh County in 2002.

104,660 people lived and worked in Vanderburgh County in 2002.

	Warrick	Posey	Gibson	Spencer	Pike	Dubois
Into Vanderburgh	14,522	5,484	3,509	1,056	393	178
From Vanderburgh	1,891	1,355	1,696	103	39	84

8,101 people commuted into Dubois County in 2002.

26,873 people lived and worked in Dubois County in 2002.

	Spencer	Pike	Gibson	Warrick
Into Dubois	1,494	1,653	236	293
From Dubois	393	124	173	48

Factor 5: Growth

County	% Growth 1990-2000
Posey	4 %
Vanderburgh	4 %
Warrick	17 %
Henderson, KY	4 %
Dubois	8 %
Gibson	2 %
Pike	3 %
Spencer	5 %

Metropolitan area counties are shown in bold.

Factor 6: Meteorology

Year-round average wind direction for

Vanderburgh County: 30% NW, 30% SW, 21% SE, 19% NE;

Dubois County: 27% NW, 30% SW, 22% SE, 20% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Vanderburgh and Warrick Counties are designated as nonattainment for the ozone NAAQS. All other area counties are designated as attainment/unclassified.

The MPO for the Evansville area, the Evansville Urban Transportation Study, covers Vanderburgh, Gibson, Posey, and Warrick Counties.

Factor 9: Level of control of emission sources

The Indiana Michigan Power Rockport facility in Spencer County has installed low NO_x burners and over-fire air to reduce NO_x and SO₂ emissions. Facility emissions information for the years 1999-2003 show an approximate reduction in NO_x and SO₂

emissions of 10% and 15 %, respectively. For the years 2001-2003 the reductions are approximately 3% and 1% for NO_x and SO₂, respectively.

6.5.2.5 Indianapolis Area

Discussion

The Indianapolis Metropolitan Area includes nine Indiana counties: Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby. Indiana recommended designating Marion County as nonattainment of the PM_{2.5} standard.

The monitors in Marion County are showing a violation of the standard. Madison County's monitor indicates concentrations below the annual PM_{2.5} standard of 15.0 µg/m³. No other area counties have monitored air quality data. The Indianapolis area has one central county, Marion County, ringed by the other eight counties. The eight outlying counties are all a similar distance from the central county with no intermediate counties. This configuration allows the EPA to consider a combination of emissions and wind data to estimate each county's potential contributions to violation of the annual PM_{2.5} standard in Marion County. A description of the methods for assessing this information is given along with the Indianapolis area emissions data below. EPA believes that this approach provides a fine tuned comparison of the potential of each of the counties surrounding Marion County to contribute to the violations recorded in Marion County.

Marion County contributes about 50 percent of the emissions of the metropolitan area on a composite emissions basis. Consistent with its intended designations elsewhere, EPA believes that this indicates that more than just Marion County contributes to the violations, and that the planning area for evaluating strategies must include a greater fraction of emissions in the area.

The wind-weighted emissions information suggests that Hamilton, Hendricks, Johnson, Madison, Morgan and Shelby Counties have significant potential to contribute to violations in Marion County. Conversely, this information suggests that Boone and Hancock have somewhat limited potential to contribute to violations in Marion County.

EPA further examined the proximity of the emissions in the surrounding to the violations in Marion County and commuting and growth information. None of the Indianapolis urbanized area as defined by the U.S. Census Bureau is in Madison or Shelby Counties. As a result, Madison and Shelby Counties have less growth and less commuting into Marion County than other counties that are more integrally part of the Indianapolis area. Much of the population and emissions in Madison and Shelby Counties are in Anderson and Shelbyville, respectively. Thus, these emissions are at a greater distance from the violations in Marion County than the other counties, for which population and emissions tend to be concentrated at the edge of Marion County.

Indiana stated that significant emission reductions have occurred in Hamilton County due to conversion of the Noblesville power plant to natural gas. However, EPA finds that

even were this plant's emissions to be eliminated, the remaining emissions in Hamilton County would still be sufficient to be considered to be contributing to violations in Marion County.

For these reasons, EPA believes that Hamilton, Hendricks, Johnson, Marion, and Morgan Counties contribute to the violations in Marion County. This is why EPA is designating them as nonattainment. EPA believes that Boone, Hancock, Madison, and Shelby Counties do not contribute and were designated attainment/unclassified. EPA also concluded that none of the numerous counties that are outside but adjacent to the Indianapolis Metropolitan Area should be considered to contribute to the violations in Marion County.

Factor 1: Emissions

Given the unique geography of the Indianapolis area, EPA calculated a wind-weighted emissions score as well as a composite emissions score for the Indianapolis area. The wind data used in calculating the wind-weighted score reflect the frequency of winds in the Indianapolis area from each of 16 directions. This data is provided under factor 6 below.

The wind-weighted score is calculated as follows: for each of the eight counties surrounding Marion County, EPA identified the direction for which the winds would blow most directly over Marion County, and tabulated the sum of the frequency of winds for that direction and the two adjacent directions among the set of 16 directions. This frequency of being upwind was multiplied times the composite score to obtain a preliminary wind-weighted composite emissions score. These eight preliminary scores added up to 8.7. For Marion County, EPA retained the unweighted composite emissions score of 50.6. EPA then normalized the scores of the surrounding scores to add up to 49.4. Each county score was multiplied by $49.4/8.7$, yielding the wind-weighted emissions score. The total of the wind-weighted emissions scores for all 9 counties is 100.

The EPA derived wind-weighted emissions scores reflect the variability of frequency of winds from different directions. This process seeks to assess more precisely the relative potential impacts of the counties in the Indianapolis area. The following table has the SO₂, NO_x, carbon, and crustal emissions, the composite emissions scores, along with the wind-weighted emissions scores for the nine counties in the Indianapolis area. Emissions data and composite emissions scores are also provided for counties adjacent to the Indianapolis Metropolitan Area. All emissions are from the 2001 NEI and are in tons.

County	SO ₂	NO _x	Carbon	Crustal	Composite emissions score	Wind-weighted emissions score
Boone	224	3,468	297	988	3.1	3.1
Hamilton	5,215	9,251	730	1,635	8.0	6.2

Hancock	338	3,936	395	1,022	3.8	2.8
Hendricks	773	5,802	593	1,596	5.7	6.8
Johnson	338	5,165	416	918	4.4	5.0
Madison	934	8,106	884	1,548	8.3	6.0
Marion	49,549	52,848	4,891	4,429	50.6	50.6
Morgan	17,343	8,303	554	1,362	7.0	11.3
Shelby	329	6,212	1,141	1,277	9.1	8.2
Bartholomew	520	5,309	659	1,382	5.9	—
Brown	46	828	132	131	1.1	—
Clay	243	2,057	209	641	2.0	—
Clinton	411	2,614	246	1,061	2.5	—
Decatur	154	2,525	190	717	2.1	—
Delaware	1,548	6,353	593	1,019	5.9	—
Fayette	150	1,426	156	392	1.5	—
Fountain	167	2,109	395	1,311	3.1	—
Grant	1,280	5,341	381	1,135	4.3	—
Henry	291	3,919	707	1,243	5.7	—
Jackson	260	3,427	341	533	3.3	—
Jefferson	39,599	33,990	549	1,368	11.2	—
Jennings	233	1,589	208	408	1.8	—
Monroe	2,168	4,852	545	647	5.1	—
Montgomery	1,072	4,099	691	1,213	5.7	—
Owen	100	1,052	118	273	1.1	—
Parke	125	3,140	389	571	3.5	—
Putnam	2,643	6,116	230	548	3.7	—
Randolf	494	2,731	232	968	2.4	—
Ripley	140	2,081	221	507	2.1	—
Rush	140	1,274	177	814	1.5	—
Scott	100	1,515	151	236	1.5	—
Tippecanoe	11,434	9,922	1,632	2,345	13.8	—

Tipton	81	1,040	158	730	1.3	—
Wayne	13,919	5,951	589	1,498	6.2	—

Speciation profile for Indianapolis: 3% Sulfates, 38% Nitrates, 59% Carbon, and 0% Crustal based on a comparison of data from site 180970078 against data from the Livonia monitor.

Factor 2: Air quality

County	2001-03 Design Value
Madison	14.6 $\mu\text{g}/\text{m}^3$
Marion	16.7 $\mu\text{g}/\text{m}^3$

There are no monitors in Boone, Hamilton, Hancock, Hendricks, Johnson, Morgan, and Shelby Counties.

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Boone	48,277	114
Hamilton	205,610	517
Hancock	58,343	191
Hendricks	114,301	280
Johnson	121,604	380
Madison	132,068	292
Marion	863,429	2,180
Morgan	67,791	167
Shelby	43,674	106

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Boone	752,000	-160,000	-21 %
Hamilton	1,807,000	-81,000	-5 %

Hancock	732,000	-2,000	0 %
Hendricks	1,240,000	6,000	0 %
Johnson	1,368,000	-8,000	-1 %
Madison	1,601,000	457,000	29 %
Marion	9,983,000	3,260,000	33 %
Morgan	913,000	17,000	2 %
Shelby	641,000	-30,000	-5 %

Commuting Information:

189,804 people commuted into Marion County in 2002.

489,449 people lived and worked in Marion County in 2002.

	Into Marion	From Marion
Boone	9,905	990
Hamilton	46,440	10,958
Hancock	15,700	1,487
Hendricks	33,009	4,602
Johnson	29,458	4,917
Madison	6,603	755
Morgan	15,749	807
Shelby	5,664	663

Factor 5: Growth

County	%Growth 1990-2000
Boone	21 %
Hamilton	68 %
Hancock	22 %
Hendricks	37 %
Johnson	31 %
Madison	2 %
Marion	8 %
Morgan	19 %

Shelby	8 %
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Factor 6: Meteorology

Indianapolis Airport wind data for 1984 to 1992 (9 year average, all seasons):

N	5.07 %
NNE	4.11 %
NE	4.35 %
ENE	4.31 %
E	3.76 %
ESE	4.96 %
SE	5.95 %
SSE	4.94 %
S	7.22 %
SSW	7.76 %
SW	11.38 %
WSW	9.20 %
W	5.82 %
WNW	6.13 %
NW	6.27 %
NNW	5.43 %
Calm	3.34 %

Wind directions for each county used in computing wind-weighted emissions scores:

County	Wind Directions		
Boone	NNW	NW	WNW
Hamilton	N	NNE	NE
Hancock	ENE	E	ESE
Hendricks	WSW	W	WNW
Johnson	SSE	S	SSW
Madison	NNE	NE	ENE

Morgan	SSW	SW	WSW
Shelby	ESE	SE	SSE

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Indiana has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby Counties are all designated as nonattainment for the ozone air quality standard.

The Indianapolis Metropolitan Planning Organization (MPO) serves Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby Counties.

Factor 9: Level of control of emission sources

The PSI Energy Noblesville power plant in Hamilton County was converted from burning coal to natural gas in 2003. This conversion significantly reduced NO_x and SO₂ emissions at this facility. However, when EPA recalculated composite emission scores assuming the complete elimination of emissions from this facility, the composite emission score declined only from 8.0 to 7.2.

6.5.2.6 Louisville Area

Discussion

The Louisville Metropolitan Area includes three Kentucky counties and Clark, Floyd, Harrison, and Scott Counties in Indiana. Several counties adjacent to the metropolitan area were evaluated, especially Jefferson County, Indiana. Indiana recommended designating Clark County as nonattainment of the PM_{2.5} standard. EPA is designating Clark and Floyd Counties and Madison Township in Jefferson County as non-attainment.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, Madison Township in Jefferson County is a partial county area included in the Louisville nonattainment area.

The monitor in Clark County is showing a violation of the standard. Floyd County’s monitor is just below the annual PM_{2.5} standard of 15 µg/m³. The emissions from both Floyd and Clark Counties are significant, with Floyd County’s emissions being greater. Jefferson County, Indiana also has a substantial level of emissions, the bulk of which is captured by designating Madison Township as nonattainment. There are relatively low emissions from Harrison and Scott Counties.

The population in Clark and Floyd Counties dominates the Indiana population in the area. All metropolitan area counties had a similar growth rate. There is significant commuting between Clark and Floyd Counties and from both counties into the Kentucky portion of the Louisville area. Commuting from Harrison and Scott Counties to the rest of the metropolitan area is modest. There is very limited commuting from Jefferson County, Indiana.

Meteorological data shows the wind is from the northeast about 21% of the time. Jefferson County, Indiana is located northeast of Clark and Floyd Counties. EPA believes that winds blow sufficiently frequent from the northeast and emissions from Jefferson County, Indiana, are sufficient that Jefferson County should be considered to contribute to violations in Louisville. Clark and Floyd Counties are included in the Louisville area ozone designations and with its metropolitan planning organization. The state did not provide any information on emission controls in the Indiana portion of the Louisville area.

Jefferson County is adjacent to the Louisville Metropolitan Area and contains a power plant with significant emissions that contribute to the violations in the Louisville Metropolitan Area. These emissions are captured by designating Madison Township as nonattainment.

Factor 1: Emissions

County	SO ₂	NO _x	Carbon	Crustal	Composite emissions score
Clark	484	4,960	725	773	12.2
Floyd	47,796	10,282	954	2,301	16.4
Harrison	419	3,677	305	466	5.3
Scott	100	1,515	151	236	2.6
Bullitt, KY	343	3,463	433	379	7.3
Jefferson, KY	62,526	81,398	2,817	3,816	51.5
Oldham, KY	529	3,707	271	475	4.7
Crawford	536	3,842	161	137	2.9
Jefferson	39,599	33,990	549	1,368	11.2
Jennings	233	1,589	208	408	3.5
Lawrence	4,330	5,707	376	909	6.5
Orange	86	2,017	171	286	2.9
Perry	789	3,102	195	257	3.4
Washington	136	1,452	380	119	3.1
Anderson, KY	443	1,535	144	180	2.5
Breckinridge, KY	321	2,592	260	288	4.4
Carroll, KY	53,086	26,269	821	2,177	15.2
Franklin, KY	601	3,059	217	273	3.8
Grayson, KY	412	1,532	235	341	4
Green, KY	104	507	103	151	1.7
Hardin, KY	1,774	7,695	524	644	2.1
Hart, KY	162	1,839	188	193	3.2
Henry, KY	156	1,465	125	288	1.8
Larue, KY	186	768	108	180	4.0
Marion, KY	143	801	147	225	2.5
Meade, KY	661	4,551	227	439	5.0
Nelson, KY	497	2,134	296	463	4.0

Owen, KY	57	572	126	105	2.1
Shelby, KY	397	2,906	231	446	1.7
Spencer, KY	31	393	102	174	4.6
Taylor, KY	632	3,642	172	221	3.1
Trimble, KY	7,998	8,458	249	506	2.9
Washington, KY	115	618	110	157	1.8

All emissions are from the 2001 NEI and are in tons. Metropolitan area counties are in bold.

Speciation profile for Louisville: 0% Sulfates, 7% Nitrates, 93% Carbon, and 0% Crustal based on a comparison of data from site number 211110043 (in Louisville) against data from the Livonia monitor.

The Clifty Creek Station in Madison Township represents approximately 99% of the SO₂, 92% of the NO_x, 62% of the carbonaceous particles and 76% of the crustal emissions for Jefferson County. Therefore, designating Madison Township as nonattainment will capture the bulk of Jefferson County's emissions.

Factor 2: Air quality

County	2001-03 Design Value
Clark	16.2 µg/m ³
Floyd	14.9 µg/m ³
Bullitt, KY	15.0 µg/m ³
Jefferson, KY	16.9 µg/m ³

There are no monitors in Harrison, Scott, and Jefferson Counties in Indiana.

Factor 3: Population density and degree of urbanization including commercial development

County	2002 Population	Population Density
Clark	98,198	262
Floyd	71,633	484
Harrison	35,244	73
Scott	23,334	123
Bullitt	63,800	213
Jefferson	698,080	1813
Oldham	49,310	261
Jefferson	32,113	89

Factor 4: Traffic and commuting patterns

County	VMT	Growth	% Change
Clark	1,262,000	144,000	11 %
Floyd	843,000	292,000	35 %
Harrison	528,000	79,000	15 %
Scott	364,000	-89,000	-25 %
Bullitt, KY	849,000	-178,000	-21 %
Jefferson, KY	7,149,000	4,398,000	62 %
Oldham, KY	507,000	2,000	0 %
Jefferson	331,000	26,000	8 %

Commuting Information:

	Floyd	Harrison	Scott	Jefferson, IN	Kentucky
Into Clark County	5,224	1,376	866	198	780
From Clark County	4,591	530	316	775	16,582

	Harrison	Scott	Jefferson, IN	Kentucky
Into Floyd County	2,073	223	39	466
From Floyd County	921	66	492	12,647

Factor 5: Growth

County	% Growth 1990-2000
Clark, IN	10%
Floyd, IN	10%
Harrison, IN	15%
Scott, IN	9%
Bullitt, KY	29%
Jefferson, KY	4%
Oldham, KY	39%
Jefferson, IN	6%

Factor 6: Meteorology

Year-round average wind direction for

Clark County, Indiana: 22% NW, 33% SW, 24% SE, 21% NE;

Floyd County, Indiana: 22% NW, 32% SW, 25% SE, 21% NE;

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The States of Indiana and Kentucky have no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Clark and Floyd Counties are designated as nonattainment in the Louisville ozone nonattainment area. Harrison, Scott, and Jefferson Counties in Indiana are designated as attainment/ unclassified.

The Kentuckiana Regional Planning and Development Agency serves as the Metropolitan Planning Organization (MPO) for Clark and Floyd Counties in Indiana.

Factor 9: Level of control of emission sources

Indiana has not submitted any information on emission controls in this area.

6.5.2.7 Muncie Area

Discussion

The Muncie area consists of Delaware County, Indiana. EPA is designating Delaware County as unclassifiable for the PM_{2.5} standard. This represents a modification of the State's recommendation that this county be designated attainment/unclassifiable.

Data must be collected for at least 75% of the scheduled days in a calendar quarter to meet the completeness criteria for showing attainment.

Muncie has a single PM_{2.5} monitor that is scheduled to sample on every third day. In the first quarters of 2001 and 2003, this monitor recorded less than 75 percent of the scheduled values but more than 11 samples. EPA policy states that this quantity of data is insufficient to label an area as attainment, insofar as the data are considered complete. On the other hand, EPA policy states that this quantity of data is sufficient to label an area nonattainment, with the data being considered complete in this case. The following are the 3-year average values recorded at this site.

County	2000-02 Design Value	2001-03 Design Value
Delaware	15.1 µg/m ³	14.3 µg/m ³

The annual PM_{2.5} standard is 15.0 µg/m³.

Under EPA policy, the data for 2000 to 2002 are considered complete, and the data for 2001 to 2003 are considered incomplete. On the other hand, the most recent data suggest that the area is attaining the standard. Therefore, EPA concludes that it cannot currently judge the most appropriate designation for this area. EPA intends to promulgate either a

nonattainment or an attainment/unclassifiable designation for this area once further data are available. EPA will consult further with the State once the necessary data become available.

6.5.3 EPA 9-Factor Analyses for Michigan for Designation of PM_{2.5} Nonattainment Areas

The following table identifies the individual areas and counties comprising those areas in Michigan that EPA is designating as nonattainment for the fine particulate matter ("PM_{2.5}") air quality standard. EPA is designating as attainment/unclassifiable all other Michigan counties not identified in the table below.

Area	Michigan Counties in Metropolitan Area	Michigan Recommended Nonattainment Counties	Counties EPA is Designating Nonattainment
Detroit-Ann Arbor-Flint	Monroe Wayne Livingston Macomb Oakland St Clair Washtenaw Genesee Lapeer Lenawee	Monroe Wayne	Monroe Wayne Livingston Macomb Oakland St Clair Washtenaw

6.5.3.1 Detroit-Ann Arbor-Flint Area

Discussion:

EPA reviewed the nine factors for the counties within the metropolitan area as well as counties adjacent to the metropolitan area in order to determine the appropriate nonattainment area. There are violating monitors in Monroe and Wayne counties. EPA agrees with the Michigan DEQ to designate Monroe and Wayne counties as nonattainment. However, based upon our nine-factor analysis, EPA believes that in addition to Monroe and Wayne counties, the Detroit nonattainment area should also include Livingston, Macomb, Oakland, St. Clair, and Washtenaw counties as one contiguous area. These counties have significant emissions and the population, population density, and vehicle miles traveled (VMT) are at sufficient levels to be part of the designated area. This is consistent with the national approach of capturing the majority of emissions and population in a metropolitan area. Genesee, Lapeer, and Lenawee counties are also in the Metropolitan area but were excluded upon review of the 9 factors. Except for Genesee County, which is discussed below, these counties have lower emissions, population, population density, and VMT.

Michigan supported its recommendation of attainment for most counties by attributing the violations in Wayne County predominantly to high emissions in Wayne County, and attributing the violation in Monroe County to emissions in Toledo, Ohio. Michigan notes the monitored attainment in Macomb County, and observes that trajectories for high and low concentration days in Wayne County indicate that the highest concentrations occur when winds are from the south and west. Michigan concludes from this evidence that the

Wayne County violations arise from a combination of long-range transport and very localized emissions, and that counties other than Wayne County do not contribute to violations in Wayne County.

EPA disagrees with Michigan's analysis. EPA's guidance includes a presumption that the entire metropolitan area contributes to the nonattainment problem, reflecting evidence that the various types of emissions that lead to PM_{2.5} concentrations have impacts on many distance scales including metropolitan scale. Michigan has not provided a convincing demonstration that EPA's presumption and the underlying understanding of the nature of PM_{2.5} is invalid or inapplicable to the Detroit area. The design value in Macomb County is 15.0 micrograms per cubic meter, just barely attaining the standard. While it is evident that Macomb County does not by itself cause violations in Wayne County, the wind data shown for factor 6 below demonstrate that winds often blow from Macomb County into Wayne County. While the wind blows from the southwest quadrant more frequently than other quadrants, the wind blows from the northwest or northeast quadrants about 40 percent of the time. Trajectory information can often be misleading; since a high fraction of observed PM_{2.5} concentrations are attributable to long range transport, trajectories for high concentration days tend to be a better measure of whether distant contributions to transported "background" concentrations are high rather than indicating high local contributions. Michigan's analysis also does not address the contributions to Wayne County concentrations from mobile sources that originate in other counties. Although different components of PM_{2.5} have different geographic scales of impact, EPA continues to believe that emissions throughout a metropolitan area can contribute significantly to observed violations. Since a significant fraction of the Detroit area's emissions occur in Livingston, Macomb, Oakland, St. Clair, and Washtenaw Counties, EPA believes that these contribute to nonattainment in Wayne and Monroe Counties.

The composite emissions score for Genesee County is somewhat higher than that of Washtenaw County. EPA nevertheless believes that Washtenaw County contributes to violations in Wayne and Monroe Counties and Genesee County does not. Washtenaw County is upwind of Wayne and Monroe Counties somewhat more frequently than Genesee County. More importantly, Washtenaw County is closer to Wayne and Monroe Counties and the observed violations, which means that the emissions are likely to have a greater impact and mobile sources are more likely to be traveling into the violating counties. Finally, Washtenaw County is part of the Detroit ozone nonattainment area whereas Genesee County is part of a separate ozone nonattainment area, and the Detroit area metropolitan planning organization includes Washtenaw County and not Genesee County. Therefore, including Washtenaw County in the PM_{2.5} nonattainment area will facilitate coordinated ozone and PM_{2.5} planning.

Michigan requested that Wayne and Monroe Counties each be treated as single county nonattainment areas. Michigan has not justified a conclusion that either of these counties may be considered single county nonattainment areas. While Monroe County may sometimes be considered part of the Toledo area (along with Lucas and Wood Counties, Ohio), particularly when winds are from the south, on such occasions Monroe County

also contributes to violations in Wayne County. The Detroit area also contributes to violations in Monroe County. Therefore, EPA intends to designate a single Detroit area nonattainment area that includes Monroe County.

There are seven counties adjacent to the metropolitan area that are not a part of another violating metropolitan area. These counties have relatively low emissions, and no other factors warrant including these counties in the nonattainment area. Therefore, no data are provided for these counties under factors 3 to 9 below.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emissions score
Genesee	3,010	20,648	1,377	1,914	7.5
Lapeer	895	5,202	389	1,109	2.1
Lenawee	642	4,496	554	1,488	2.5
Livingston	701	8,024	852	1,695	4.0
Macomb	4,602	33,482	1,413	1,282	9.5
Monroe	126,037	62,432	1,565	4,834	15.1
Oakland	8,277	44,171	2,264	1,829	13.6
St. Clair	72,450	40,659	1,248	2,687	10.4
Washtenaw	2,163	14,980	944	1,502	5.3
Wayne	59,884	107,604	4,435	2,823	29.9
Hillsdale	1,286	3,270	245	812	1.4
Ingham	13,381	17,912	648	1,126	4.9
Jackson	1,093	7,895	599	1,269	3.2
Saginaw	2,812	9,755	978	2,457	4.8
Sanilac	397	2,893	422	1,429	1.9
Shiawassee	768	3,749	318	1,024	1.7
Tuscola	531	3,162	417	1,404	1.9
Fulton, OH	878	5,105	336	692	1.9
Lucas, OH	31,000	36,975	1,370	1,702	10.0

Urban increment:

Total mass= 4.3 µg/m³

0% sulfates; 54% nitrates; 42% carbon; 4% crustal.

Urban site= 261630001;

Rural site= MKGO1 (M.K. Goddard)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Genesee	12.6
Macomb	13.3
Monroe	15.1
Oakland	14.8

St. Clair	13.9
Washtenaw	14.6
Wayne	19.5
Ingham	13.4
Saginaw	11.0
Lucas, OH	15.2

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2003 Population	Population Density
Genesee	441,423	690
Lapeer	90,776	139
Lenawee	100,145	133
Livingston	168,862	297
Macomb	808,529	1684
Monroe	149,253	271
Oakland	1,202,721	1378
St. Clair	167,712	231
Washtenaw	334,351	471
Wayne	2,045,540	3331

Factor 4. Traffic and commuting patterns:

County	County VMT (Thousands)	Percent	Number
Genesee	4,842	18	33,966
Lapeer	1,139	50	20,118
Lenawee	908	22	10,026
Livingston	1,804	54	42,858
Macomb	6,964	41	156,343
Monroe	1,679	28	19,372
Oakland	10,758	28	167,943
St. Clair	2,029	35	26,992
Washtenaw	3,521	21	35,525
Wayne	20,171	24	201,563

Factor 5. Expected growth:

County	Percent growth 1990-2000
Genesee	1
Lapeer	18
Lenawee	8
Livingston	36
Macomb	10
Monroe	9
Oakland	10
St Clair	13
Washtenaw	14
Wayne	-2

Factor 6. Meteorology:

County	Average percent of wind direction by quadrant			
	Northwest	Southwest	Southeast	Northeast
Genesee	24	42	18	16
Lapeer	25	40	18	17
Lenawee	25	40	16	19
Livingston	26	40	18	17
Macomb	26	39	18	18
Monroe	25	40	16	19
Oakland	25	39	18	18
St. Clair	25	39	18	18
Washtenaw	26	39	17	19
Wayne	26	38	17	19

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in land elevation, etc.) that affect this area. The state provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Southeast Michigan Council of Governments (SEMCOG) is the Metropolitan Planning Organization (MPO) for Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne counties.

-source: SEMCOG web page, <http://www.semcog.org/>

This metropolitan area is divided into two ozone nonattainment areas. The Detroit area includes the following counties: Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne. The Flint area includes the following counties: Genesee and Lapeer.

Factor 9. Level of control of emission sources:

The state provided no information about the level of control of emission sources for this area.

6.5.4 EPA 9-Factor Analyses for Ohio for Designation of Nonattainment Areas for PM_{2.5}

The following table identifies the individual areas and counties comprising those areas in Ohio that EPA is designating as nonattainment. Ohio provided two options of recommendations: Option 1 only includes counties monitoring nonattainment, and Option 2 includes the Option 1 counties plus additional counties recommended as contributing to nonattainment. EPA finds the Option 2 recommendations generally to reflect a proper review of nonattainment areas in accordance with EPA guidance, and so this table

compares EPA's recommendations to Ohio's Option 2 recommendations. Following this table is a description of the data EPA examined and a discussion of each area and the basis for EPA's designations. EPA is designating as attainment/unclassifiable all counties not identified in the table below.

Area	Ohio Counties in Metropolitan Area	Ohio Recommended Nonattainment Counties (Option 2)	Counties EPA is Designating Nonattainment
Canton-Massillon, OH	Stark Carroll	Stark	Stark
Cincinnati-Hamilton, OH-KY-IN	Butler Clermont Hamilton Warren Brown	Butler Clermont Hamilton Warren	Butler Clermont Hamilton Warren
Cleveland-Akron-Lorain, OH	Cuyahoga Lake Lorain Medina Portage Summit Ashtabula Geauga	Cuyahoga Lake Lorain Medina Portage Summit	Cuyahoga Lake Lorain Medina Portage Summit Ashtabula Ashtabula Township
Columbus, OH	Delaware Fairfield Franklin Licking Madison Pickaway	Delaware Fairfield Franklin Licking	Delaware Fairfield Franklin Licking Coshocton Franklin Township
Dayton-Springfield, OH	Clark Greene Montgomery Miami	Clark Greene Montgomery	Clark Greene Montgomery
Huntington-Ashland, WV-KY-OH	Lawrence	Lawrence Scioto	Lawrence Scioto Adams Monroe Township Sprigg Township Gallia Cheshire Township
Parkersburg-Marietta, WV-OH	Washington		Washington
Steubenville-Weirton, OH-WV	Jefferson	Jefferson	Jefferson
Toledo, OH	Lucas Wood Fulton	Lucas Wood	Lucas Wood

Wheeling, WV-OH	Belmont		Belmont
Youngstown-Warren, OH	Columbiana Mahoning Trumbull	Columbiana Mahoning Trumbull	Columbiana Mahoning Trumbull

6.5.4.1 Canton-Massillon, OH

Discussion:

There are two counties in this metropolitan area, Stark County and Carroll County. EPA agrees with the Ohio EPA that the Canton-Massillon area should include only Stark County. The majority of the emissions and population are located in Stark County, which contains a monitor that is violating the standard. Stark County also represents the ozone nonattainment area for the Canton-Massillon Metropolitan Area. There are four counties that are adjacent to the metropolitan area, Harrison, Holmes, Tuscarawas and Wayne Counties that are not part of other metropolitan areas. Of these counties, only Wayne County required further review due to the population and emissions in the county. Wayne County is adjacent to both the Cleveland and Canton Metropolitan areas. It does not appear appropriate to associate this county with the Canton-Massillon Metropolitan Area. There is limited commuting from Wayne County to the Canton-Massillon Metropolitan Area and there does not appear to be additional interaction that would indicate a need to include Wayne County in the nonattainment area. In addition, Wayne County has relatively low emissions when compared to emissions in the Cleveland Metropolitan Area.

Because emissions are relatively low for Harrison, Holmes, and Tuscarawas Counties, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emission score
Carroll	386	1,886	120	234	10.0
Stark	2,736	14,968	1,255	2,158	90.0
Harrison	258	712	70	116	5.2
Holmes	272	1,687	141	448	10.8
Tuscarawas	3,970	6,333	354	553	40.5
Wayne	21,450	8,911	702	1,849	126.4

Urban increment:

Total mass = 4.2 $\mu\text{g}/\text{m}^3$

11% sulfates; 30% nitrates; 49% carbon; 10% crustal.

Urban site = 390990014;

Rural site = MKGO1 (M.K. Goddard)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Stark	17.3 $\mu\text{g}/\text{m}^3$

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Carroll	29,166	74
Stark	377,940	656
Wayne	112,704	203

Factor 4: Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Carroll	5,125	40	193
Stark	956	1	3,135
Wayne	1,681	3	1,039

Factor 5: Expected growth

County	Percent growth 1990-2000
Carroll	9
Stark	3
Wayne	10

Factor 6: Meteorology

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Carroll	27	39	18	17
Stark	24	41	17	17
Wayne	24	41	18	16

Factor 7: Geography/topography

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8: Jurisdictional boundaries

The Stark County Regional Planning Commission/Stark County Area Transportation Study (SCATS) is the Metropolitan Planning Organization (MPO) for the Canton-Massillon, OH.

-Source: SCATS web page,
<http://www.rpc.co.stark.oh.us/scats.html>

The area's ozone nonattainment area consists of the following county:
 -Stark

Factor 9: Level of control of emission sources

The State provided no information about the level of control of emission sources for this area.

6.5.4.2 Cincinnati-Hamilton Area

Discussion:

There are five Ohio counties in this Metropolitan area: Brown, Butler, Clermont, Hamilton and Warren Counties. There are violating monitors in Butler and Hamilton Counties. EPA agrees with the Ohio EPA's Option 2 recommendation to include Butler, Clermont, Hamilton and Warren Counties as nonattainment for the Cincinnati-Hamilton nonattainment area. Brown County is not included because there are minimal emissions and population in this county relative to the Metropolitan area. Brown County was also excluded from the ozone nonattainment area for Cincinnati-Hamilton. There are four counties that are adjacent to the metropolitan area in Ohio and not included in other metropolitan areas. These counties are Preble, Clinton, Highland and Adams Counties. Of these adjacent counties, Adams County merits further review due to the emissions in

the county. Adams County is more likely to contribute to violations in Scioto County and the Huntington-Ashland metropolitan area, and is addressed in connection with that area.

Because emissions are relatively low for Preble, Clinton, and Highland Counties, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

County	SO _x	NO _x	Carbon	Crustal	Composite emission score
Boone, KY	14,717	15,794	721	1,068	7.7
Brown, OH	395	2,927	208	520	2.0
Butler, OH	13,204	19,735	956	1,752	9.9
Campbell, KY	860	5,294	285	260	2.8
Clermont, OH	84,599	45,618	1,693	3,916	20.0
Dearborn, IN	56,773	31,138	900	2,121	11.4
Gallatin, KY	350	2,365	100	234	1.0
Grant, KY	210	2,664	182	191	1.8
Hamilton, OH	88,053	58,398	2,780	3,873	30.3
Kenton, KY	1,573	8,365	415	301	4.2
Ohio, IN	113	682	49	89	0.5
Pendleton, KY	597	3,396	139	207	1.5
Warren, OH	895	7,565	743	1,063	6.9
Adams, OH	125,136	52,992	1,435	3,973	19.4
Bracken, KY	52	570	76	94	0.7
Carroll, KY	53,086	26,269	821	2,177	10.3
Clinton, OH	375	2,490	193	583	1.8
Franklin, IN	92	1,335	143	341	1.3

Harrison, KY	290	1,786	114	225	1.1
Highland, OH	242	1,756	177	498	1.6
Mason, KY	38,142	16,071	562	1,429	7.0
Owen, KY	57	572	126	105	1.1
Preble, OH	428	2,765	228	721	2.2
Ripley, IN	140	2,081	221	507	2.0
Switzerland, IN	251	1,554	101	145	1.0
Union, IN	58	548	68	272	0.6

Urban increment:

Total mass= 2.1 $\mu\text{g}/\text{m}^3$

7% sulfates; 15% nitrates; 78% carbon; 0% crustal.

Urban site=211170007;

Rural site=LIVO1 (Livonia)

Factor 2: Air quality in potentially included versus excluded areas

County	2001-2003 Design Value
Butler, OH	16.2 $\mu\text{g}/\text{m}^3$
Campbell, KY	14.5 $\mu\text{g}/\text{m}^3$
Hamilton, OH	17.8 $\mu\text{g}/\text{m}^3$
Kenton, KY	15.0 $\mu\text{g}/\text{m}^3$
Preble, OH	13.5 $\mu\text{g}/\text{m}^3$

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Boone, KY	93,290	379
Brown, OH	43,464	88
Butler, OH	340,543	729

Campbell, KY	88,604	583
Clermont, OH	183,352	406
Dearborn, IN	47,333	155
Gallatin, KY	7,836	79
Grant, KY	23,620	91
Hamilton, OH	833,721	2048
Kenton, KY	152,164	934
Ohio, IN	5,804	67
Pendleton, KY	14,815	53
Warren, OH	175,133	438
Adams, OH	27,804	48

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Boone, KY	19,805	44	842
Brown, OH	9,901	53	417
Butler, OH	62,298	39	2610
Campbell, KY	26,658	62	1097
Clermont, OH	50,763	57	1649
Dearborn, IN	10,978	48	607
Gallatin, KY	1,805	50	254
Grant, KY	5,234	51	379
Hamilton, OH	54,833	14	8420
Kenton, KY	44,002	58	1816
Ohio, IN	1,644	59	56
Pendleton, KY	3,704	57	169
Warren, OH	32,089	42	15
Adams	2,578	23	283

Factor 5. Expected growth

County	Percent growth 1990-2000
Boone, KY	49
Brown, OH	21
Butler, OH	14
Campbell, KY	6
Clermont, OH	19
Dearborn, IN	19
Gallatin, KY	46
Grant, KY	42
Hamilton, OH	-2
Kenton, KY	7
Ohio, IN	6
Pendleton, KY	20
Warren, OH	39
Adams, OH	8

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Boone, KY	22	41	18	19
Brown, OH	23	40	18	18
Butler, OH	24	40	18	18
Campbell, KY	23	40	18	19
Clermont, OH	23	40	18	18
Dearborn, IN	23	40	18	19
Gallatin, KY	22	41	19	19
Grant, KY	21	40	19	20
Hamilton, OH	23	41	18	19
Kenton, KY	22	41	18	19

Ohio, IN	22	39	19	19
Pendleton, KY	21	40	19	20
Warren, OH	24	39	19	18
Adams, OH	22	39	20	19

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Ohio-Kentucky-Indiana Regional Council of Governments (OKI) is the Metropolitan Planning Organization (MPO) for Butler, Warren, Clermont, and Hamilton Counties in Ohio; Campbell, Kenton, and Boone Counties in Kentucky; and Dearborn County, Indiana.

-Source: OKI web page, <http://www.oki.org/>

The Ohio portion of this area's ozone nonattainment area consists of the following Ohio counties:

-Butler, Clermont, Hamilton, Warren, Clinton

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.3 Cleveland-Akron-Lorain Area

Discussion:

There are violating monitors in Cuyahoga and Summit Counties. EPA is modifying the Ohio EPA Option 2 recommendation to include Cuyahoga, Lake, Lorain, Medina, Summit, and Portage Counties, and Ashtabula Township in Ashtabula County in the Cleveland-Akron-Lorain nonattainment area. These counties are all in the ozone nonattainment area, which will facilitate planning for both standards.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small “free-standing” boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, Ashtabula Township in Ashtabula County is a partial county area included in the Cleveland-Akron-Lorain nonattainment area.

The State of Ohio submitted information on August 30, 2004, further supporting its recommendation that Geauga County has low emissions and should not be included in the nonattainment area. EPA agrees with this recommendation. EPA is also designating most of Ashtabula County as nonattainment, with the exception of Ashtabula Township, which contains the Ashtabula power plant and a significant fraction of the population of Ashtabula County.

There are four counties adjacent to this metropolitan area that are not a part of another metropolitan area. These are Erie, Huron, Ashland and Wayne Counties. Emissions are relatively low for these counties.

Because emissions are relatively low for Ashland, Erie, Huron, and Wayne Counties, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emissions score
Ashtabula	14,985	16,470	870	1,098	9.7
Cuyahoga	15,440	52,547	3,126	1,808	28.0
Gauga	624	3,985	472	648	3.6

Lake	53,219	24,531	1,074	1,570	16.2
Lorain	35,677	31,826	1,212	2,007	17.1
Medina	527	7,132	526	788	4.6
Portage	1,643	9,120	712	794	6.0
Summit	16,264	27,641	1,511	1,066	14.8
Ashland	825	3,460	214	663	2.4
Crawford, PA	1,231	8,034	413	772	4.4
Erie	1,341	7,327	447	635	11.8
Huron	557	3,828	242	697	2.6
Wayne	21,450	8,911	702	1,849	8.9

Urban increment:

Total mass= 7.1 $\mu\text{g}/\text{m}^3$

13% sulfates; 34% nitrates; 42% carbon; 11% crustal.

Urban site=390350060

Rural site=MKGO1 (M.K. Goddard)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Cuyahoga	18.3 $\mu\text{g}/\text{m}^3$
Lake	13.4 $\mu\text{g}/\text{m}^3$
Lorain	13.9 $\mu\text{g}/\text{m}^3$
Portage	14.2 $\mu\text{g}/\text{m}^3$
Summit	16.6 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2003 Population	Population Density
Ashtabula	102,515	146

Cuyahoga	1,379,049	3,011
Geauga	92,980	230
Lake	229,004	1,004
Lorain	288,360	585
Medina	158,439	375
Portage	153,886	313
Summit	546,381	1,323

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Ashtabula	11,106	24	1,107
Cuyahoga	49,985	8	11,461
Geauga	24,452	55	901
Lake	42,894	37	1,833
Lorain	40,464	30	2,514
Medina	37,343	49	1,622
Portage	34,001	44	1,796
Summit	51,921	20	5,141

Factor 5. Expected growth:

County	Percent growth 1990-2000
Ashtabula	3.0
Cuyahoga	-1.0
Geauga	12.0
Lake	6.0
Lorain	5.0
Medina	23.0

Portage	7.0
Summit	5.0

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Ashtabula	24	40	20	15
Cuyahoga	21	45	16	18
Geauga	23	41	20	16
Lake	22	43	18	17
Lorain	21	45	16	18
Medina	21	45	16	18
Portage	25	40	19	16
Summit	23	42	17	17

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Northeast Ohio Areawide Coordinating Agency (NOACA) is the Metropolitan Planning Organization (MPO) for Cuyahoga, Geauga, Lake (OH), Lorain, and Medina Counties.

-source: NOACA web page, <http://www.noaca.org/>

The area's ozone nonattainment area consists of the following counties:

-Ashtabula, Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, and Summit

Factor 9. Level of control of emission sources:

Although the State has indicated that the power plant located in Ashtabula County has reduced its NO_x and SO₂ emissions, EPA does not have information as to the permanence or federal enforceability of those reductions, nor did the State indicate what

portion of these emission reductions occurred after the 2001 date for which EPA's emissions data base applies.

6.5.4.4 Columbus Area

Discussion:

Franklin County contains a violating monitor. There are no other monitors in the metropolitan area. Ohio EPA's Option 2 recommendation was to designate Delaware, Fairfield, Franklin, and Licking Counties as nonattainment. EPA is including these counties as well as Franklin Township in Coshocton County in the Columbus nonattainment area. Pickaway and Madison Counties are excluded from the nonattainment area. These two counties have the lowest composite emissions scores in the metropolitan area. Pickaway County was not included as part of the ozone nonattainment area, and Madison County was included in the ozone nonattainment area because it contained a monitored violation of the ozone standard. These two counties also have the lowest population, population density and vehicle miles traveled in the metropolitan area. There are eleven counties adjacent to the metropolitan area that are not included in another metropolitan area. Most of these counties have relatively low emissions and do not warrant further discussion. The exception is Coshocton County, which has significant emissions, principally from the Conesville power plant located in Franklin Township. EPA believes that these emissions are contributing to the violation in the Columbus Metropolitan Area. By designating Franklin Township in Coshocton County as nonattainment, these emissions are being captured.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small "free-standing" boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped "land connector" extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for

governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, Franklin Township in Coshocton County is a partial county area included in the Columbus nonattainment area.

Because emissions are relatively low for the counties adjacent to the metropolitan area other than Coshocton County, and no other factor warranted designating these counties nonattainment, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emissions score
Delaware	676	6,088	573	1,277	11.2
Fairfield	1,301	6,556	507	1,098	10.4
Franklin	6,435	41,541	2,084	2,098	48.2
Licking	1,054	7,815	909	1,701	17.1
Madison	233	3,106	259	1,033	5.2
Pickaway	9,854	5,971	363	1,282	7.9
Champaign	383	1,757	180	602	3.5
Coshocton	97,412	24,560	1,385	3,733	30.9
Fayette	309	2,136	204	669	4.0
Hocking	408	2,161	104	154	2.4
Knox	302	2,225	258	657	4.9
Marion	675	3,896	273	909	5.7
Morrow	291	2,434	157	532	3.4
Muskingum	1,908	5,595	363	656	7.8
Perry	327	2,079	133	326	2.9
Ross	31,103	8,000	423	910	9.6

Union	377	2,202	246	897	4.7
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Urban increment:

Total mass= 2.1 $\mu\text{g}/\text{m}^3$

0% sulfates; 27% nitrates; 73% carbon; 0% crustal.

Urban site=390171004;

Rural site=LIVO1 (Livonia)

The Conesville Power Plant in Franklin Township represents approximately 99% SO₂, 90% NO_x, 78% Carbon and 87% Crustal emissions for Coshocton County. Therefore, designating Franklin Township as nonattainment will capture the bulk of Coshocton County's emissions.

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Franklin	16.7 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Delaware	125,399	283
Fairfield	129,161	255
Franklin	1,086,814	2013
Licking	148,731	216
Madison	40,365	87
Pickaway	53,437	106
Coshocton	36,836	65

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Delaware	32,350	56	1,099
Fairfield	31,533	52	1,064

Franklin	24,992	5	10,081
Licking	25,636	36	1,474
Madison	8,378	47	619
Pickaway	10,498	48	545
Coshocton	843	5	308

Factor 5. Expected growth

County	Percent growth 1990-2000
Delaware	64
Fairfield	19
Franklin	11
Licking	13
Madison	8
Pickaway	9
Coshocton	3

Factor 6. Meteorology:

County	Average percent of wind direction by quadrant			
	Northwest	Southwest	Southeast	Northeast
Delaware	24	35	23	19
Fairfield	24	34	23	19
Franklin	24	33	24	20
Licking	24	35	23	19
Madison	24	34	23	19
Pickaway	24	33	24	19
Coshocton	24	42	18	16

Muskingum	24	36	23	18
Perry	24	35	23	19
Ross	24	34	23	19
Union	24	34	23	19

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Mid-Ohio Regional Planning Commission (MORPC) is the Metropolitan Planning Organization (MPO) for the Columbus, OH area.

Source: MORPC web page, <http://www.morpc.org/MORPC.htm>

The area's ozone nonattainment area consists of the following counties:

-Delaware, Franklin, Licking, Fairfield, Madison, and Knox

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.5 Dayton-Springfield Area

Discussion:

There is a violating monitor in Montgomery County. EPA agrees with the Ohio EPA Option 2 to include Clark, Greene, and Montgomery Counties in the Dayton-Springfield nonattainment area. The majority of emissions and population are captured notwithstanding the exclusion of Miami County, which has limited emissions and population. Miami County is also lower in terms of population density and VMT in the metropolitan area.

There are six counties adjacent to the metropolitan area and not included in another metropolitan area. Emissions are relatively low for these counties, and no other factor warranted designating these counties nonattainment. Therefore the following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	Composite emissions score
Clark	544	5,691	395	1,024	16.1
Greene	1,895	8,841	389	1,064	17.9
Miami	478	4,116	337	972	13.2
Montgomery	11,214	24,177	1,190	1,210	52.8
Champaign	383	1,757	180	602	6.8
Darke	551	3,174	381	1,316	14.0
Preble	428	2,765	228	721	8.9
Clinton	375	2,490	193	583	7.7
Fayette	309	2,136	204	669	7.8
Shelby	803	3,468	225	670	9.3

Urban increment:

Total mass= 2.1 $\mu\text{g}/\text{m}^3$:

0% sulfates; 27% nitrates; 73% carbon; 0% crustal.

Urban site=390171004;

Rural site=LIVO1 (Livonia)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Clark	14.7 $\mu\text{g}/\text{m}^3$
Greene	9.5 $\mu\text{g}/\text{m}^3$
Montgomery	15.2 $\mu\text{g}/\text{m}^3$
Preble	13.5 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
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Clark	143,416	359
Greene	149,964	361
Miami	99,596	245
Montgomery	554,470	1200

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Clark	14,604	22	1,483
Greene	27,963	38	1,299
Miami	13,764	28	850
Montgomery	31,453	12	5,668

Factor 5. Expected growth

County	Percent growth 1990-2000
Clark	-2
Greene	8
Miami	6
Montgomery	-3

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Clark	25	36	21	18
Greene	25	36	21	18
Miami	25	38	20	17
Montgomery	25	38	20	17

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Miami Valley Regional Planning Commission (MVRPC) is the Metropolitan Planning Organization (MPO) for the following counties: Greene, Miami, Montgomery, and portions of Warren.

-Source: MVRPC website, <http://www.mvrpc.org/index.htm>

The area's ozone nonattainment area consists of the following counties:

-Clark, Greene, Miami, and Montgomery

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.6 Huntington-Ashland Area

Discussion:

There are monitors showing violations of the standard in Scioto and Lawrence Counties. Therefore, EPA agrees with Ohio's Option 2 recommendation to designate these counties nonattainment. We are also including Monroe and Sprigg Townships in Adams county and Cheshire Township in Gallia County in this nonattainment area. Lawrence County is the only county in the Ohio portion of the metropolitan area. Aside from Scioto County, there are four counties in Ohio adjacent to the metropolitan area. These are Adams, Pike, Jackson and Gallia Counties. Adams County contains the DP&L Killen Generating Station and the DP&L J.M. Stuart Generating Station. Gallia contains the Ohio Power Gavin power plant and Ohio Valley Electric Corporation Kyger Creek power plant. The townships listed for Adams and Gallia counties are included to capture the significant emissions from these plants which are contributing to violations.

In the June 2004 letters from EPA to the States responding to their designation recommendations, EPA proposed the designation of a number of counties primarily because of high pollutant emissions from power plants. Most of these plants were located in nearby counties adjacent to the metropolitan area (as defined either by the 1999 or 2003 OMB metropolitan area definitions). EPA suggested that a State could provide a partial county boundary that would extend to the relevant power plant to include it in the nonattainment area.

A number of states responded to this suggestion with a series of connected townships or other unique boundaries. Some states also suggested an alternative approach in which partial county areas for power plants in some cases could be small "free-standing"

boundaries that are considered part of the nearby nonattainment area. In this way, it would not be necessary to include additional townships or other minor civil divisions comprising an odd-shaped “land connector” extending from the main part of the nonattainment area to the power plant.

After considering these comments from the States, EPA agrees that such an approach is preferable in cases where a partial county nonattainment boundary has not already been established for that source (e.g. partial county boundaries recently established for 8-hour ozone nonattainment areas). For purposes of consistency, EPA has decided that free-standing portions of nonattainment areas should be based on a pre-existing boundary for a minor civil division (such as a township or tax district) or other boundary defined for governmental use (such as a census block group or census tract). Accordingly, this kind of partial county boundary should not be defined simply as the boundary of the facility. Therefore, Monroe and Sprigg Townships in Adams county and Cheshire Township in Gallia County are partial county areas included in the Hunting-Ashland nonattainment area.

Emissions are relatively low for Pike and Jackson Counties, and no other factor warranted designating these counties nonattainment. The following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	Composite emissions score
Boyd, KY	11,740	13,478	689	1,242	25.2
Cabell, WV	5,155	27,903	1,318	774	40.3
Carter, KY	237	2,615	242	249	6.8
Greenup, KY	2,519	4,336	295	160	9.5
Lawrence, OH	841	4,399	293	379	8.6
Wayne, WV	1,023	6,485	317	199	9.6
Adams, OH	125,136	52,992	1,435	3,973	102.4
Elliott, KY	115	393	114	46	3.1
Gallia, OH	164,984	61,079	2,171	6,238	141.4
Jackson, OH	461	1,320	164	219	4.7

Lawrence, KY	56,055	21,265	745	1,718	48.3
Lewis, KY	469	2,873	285	121	8.1
Lincoln, WV	67	1,314	143	108	4.0
Martin, KY	661	1,236	136	131	4.0
Mason, WV	70,053	31,327	899	2,162	60.0
Mingo, WV	281	2,842	191	217	5.5
Rowan, KY	313	1,691	204	123	5.7
Scioto, OH	2,790	5,566	400	559	12.5

Urban increment:

Total mass= 3.2 $\mu\text{g}/\text{m}^3$:

10% sulfates; 6% nitrates; 84% carbon; 0% crustal.

Urban site=210190017;

Rural site=QUCI1 (Quaker City)

The DP&L Killen Generating Station and the DP&L J.M. Stuart Generating Station represent approximately 99% of the SO_2 , 93% of the NO_x , 88% of the carbonaceous particles and 94% of the crustal emissions for Adams County. Designating Monroe and Sprigg Townships as nonattainment will capture these emissions, and therefore the bulk of the emissions for Adams County. The Ohio Power Gavin power plant and Ohio Valley Electric Corporation Kyger Creek power plant represents approximately 99% of the SO_2 , 97% of the NO_x , 93% of the carbonaceous particles and 96% of the crustal emissions for Gallia County. Designating Cheshire Township as nonattainment will capture these emissions, and therefore the bulk of the emissions for Gallia County.

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Boyd, KY	15.0 $\mu\text{g}/\text{m}^3$
Cabell, WV	16.6 $\mu\text{g}/\text{m}^3$
Carter, KY	12.2 $\mu\text{g}/\text{m}^3$
Lawrence	15.8 $\mu\text{g}/\text{m}^3$
Scioto	17.2 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Lawrence, OH	62,172	137
Boyd, KY	49,603	310
Cabell, WV	95,266	338
Carter, KY	27,055	66
Greenup, KY	36,761	106
Wayne, WV	42,382	84
Adams	27,804	48
Gallia	31,301	67
Scioto	78,041	128

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Lawrence, OH	11,446	49	796
Boyd, KY	3,967	21	411
Cabell, WV	2,864	7	1,030
Carter, KY	2,088	20	665
Greenup, KY	5,743	40	264
Wayne, WV	8,203	52	377
Adams	2,578	23	283
Gallia	337	3	266
Scioto	1,333	5	633

Factor 5. Expected growth:

County	Percent growth 1990-2000
Lawrence, OH	1
Boyd, KY	-3
Cabell, WV	0
Carter, KY	10
Greenup, KY	0
Wayne, WV	3
Adams	8
Gallia	7
Scioto	9

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Lawrence, OH	22	39	20	19
Boyd, KY	21	38	21	19
Cabell, WV	22	39	20	20
Carter, KY	2	39	20	20
Greenup, KY	22	39	20	19
Wayne, WV	22	39	20	20
Adams	22	39	20	19
Gallia	22	39	20	20
Scioto	22	39	20	20

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The KYOVA Interstate Planning Commission is the Metropolitan Planning Organization (MPO) for Lawrence County, OH.

-Source: KYOVA website. <http://www.state.wv.us/kyova/>

There are no counties in the Ohio portion of the metropolitan area designated nonattainment for the ozone standard.

Factor 9. Level of control of emission sources:

The state has indicated that selective catalytic reduction (SCR) equipment has been installed on the DP&L Killen Generating Station and the DP&L J.M. Stuart Generating Station in Adams County and on the Ohio Power Gavin power plant and the Ohio Valley Electric Corporation Kyger Creek power plant in Gallia County. However, EPA does not have information as to the permanence, federal enforceability, or magnitude of those reductions. It is also unclear whether the NO_x emission controls are operated on an annual basis. The state is in the process of reviewing modeling protocols for SO₂ scrubber installations at the DP&L Killen Generating Station and the DP&L J.M. Stuart Generating Station. The scrubbers have not yet been installed, there is no current requirement for installation of this equipment, and EPA has no information on when these possible reductions might occur. Thus, EPA is not giving credit to these reductions as part of its designations decisionmaking.

6.5.4.7 Parkersburg-Marietta Area

Discussion:

Only one county in Ohio, Washington County, is in the metropolitan area. This county has a high level of emissions and contributes to violations in Wood County, West Virginia. Washington County also has a significant fraction of the area's population. Therefore, EPA is designating Washington County nonattainment as part of the Parkersburg-Marietta nonattainment area.

There are five counties in Ohio adjacent to the metropolitan area, including Meigs, Athens, Morgan, Noble and Monroe Counties. Emissions are relatively low for these counties, and no other factor warranted designating these counties nonattainment. The following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emission score
Washington	173,312	37,020	2,415	6,711	82.2

Wood, WV	6,514	6,943	591	482	17.8
Athens	733	3,166	176	222	5.4
Jackson, WV	3,464	3,947	451	1,128	13.3
Meigs	375	2,244	147	145	4.4
Monroe	4,532	2,809	162	504	5.2
Morgan	81	558	88	122	2.5
Noble	144	1,622	87	127	2.7
Pleasants, WV	68,264	23,398	823	1,411	30.1
Ritchie, WV	118	713	97	63	2.8
Tyler, WV	176	1,233	122	126	3.6
Wirt, WV	19	206	46	36	1.3

Urban increment:

Total mass= 3.2 $\mu\text{g}/\text{m}^3$:

10% sulfates; 6% nitrates; 84% carbon; 0% crustal.

Urban site=210190017;

Rural site=QUCI1 (Quaker City)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Wood, WV	16.0 $\mu\text{g}/\text{m}^3$
Athens	12.5 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Washington	62,561	99
Wood, WV	87,306	238

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Washington	5,927	21	737
Wood, WV	3,316	9	911

Factor 5. Expected growth:

County	Percent growth 1990-2000
Washington	2
Wood, WV	1

Factor 6. Meteorology:

County	Average percent of wind direction by quadrant			
	Northwest	Southwest	Southeast	Northeast
Washington	22	37	19	21
Wood, WV	22	39	18	21

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Wood-Washington-Wirt Interstate Planning Commission (WWW) is the Metropolitan Planning Organization (MPO) for the following townships in Washington County, OH: Newport, Marietta, Fearing, Muskingum, Warren, Dunham and Belpre Townships.

-Source: WWW website, <http://www.triplew.org/index.html>

The area's ozone nonattainment area consists of the following counties:

-Washington County, OH, and Wood County, WV

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.8 Steubenville-Weirton Area

Discussion:

The only Ohio county in the metropolitan area is Jefferson County. There is a monitor violating the standard in Jefferson County. EPA agrees with Ohio and is including Jefferson County in the Steubenville-Weirton nonattainment area. There is one county adjacent to the metropolitan area in Ohio that is not part of another violating metropolitan area, namely Harrison County. This county has a low composite emissions score as well as having relatively low population and VMT for the area.

Because emissions are relatively low for Harrison County, and no other factor warranted designating this county nonattainment, the following data summaries for factors 3 through 9 do not address this county.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	Composite emission score
Brooke, WV	1,663	2,500	191	277	3.7
Hancock, WV	1,982	4,961	1,243	1,747	18.7
Jefferson	217,794	61,402	2,723	7,529	77.6
Harrison	258	712	70	116	1.3

Urban increment:

Total mass= 4.2 $\mu\text{g}/\text{m}^3$:

11% sulfates; 30% nitrates; 49% carbon; 10% crustal.

Urban site=390990014;

Rural site=MKGO1 (M.K. Goddard)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Brooke, WV	16.8 $\mu\text{g}/\text{m}^3$
Hancock, WV	17.4 $\mu\text{g}/\text{m}^3$
Jefferson	17.8 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Brooke, WV	25,179	283
Hancock, WV	32,082	387
Jefferson	72,402	177

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Brooke, WV	2,548	24	313
Hancock, WV	4,029	28	212
Jefferson	3,161	11	741

Factor 5. Expected growth:

County	Percent growth 1990-2000
Brooke, WV	-6
Hancock, WV	-7
Jefferson	-8

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Brooke, WV	29	36	19	16
Hancock, WV	29	36	19	16
Jefferson	28	37	19	16

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Brooke-Hancock-Jefferson Metropolitan Planning Commission (BHJMPC) is the Metropolitan Planning Organization (MPO) for Jefferson County, OH.

-Source: BHJMPC website, <http://www.bhjmpc.org/>

The Ohio portion of this ozone nonattainment area consists of the following county:
-Jefferson

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.9 Toledo Area

Discussion:

There is a violating monitor in Lucas County. EPA agrees with the Ohio EPA's Option 2 recommendation and is designating Lucas and Wood Counties as the Toledo nonattainment area. Fulton County is also in the Metropolitan area but was excluded upon review of the nine factors. Fulton County has lower emissions, population, population density, and VMT in the Metropolitan area. Fulton County was also excluded from the ozone nonattainment area. There are several counties adjacent to the metropolitan area and in Ohio, including Hancock, Henry, Ottawa, Putnam, Sandusky, Seneca, and Williams Counties. These counties have lower composite emissions scores and are also lower in the other factors including population and VMT.

Thus, no other factor warranted designating these counties nonattainment. The following data summaries for factors 3 through 9 do not address these counties.

Monroe County, Michigan, has a design value of $15.1 \mu\text{g}/\text{m}^3$, but this county is part of the Detroit Metropolitan Area. EPA is designating this county as part of the Detroit nonattainment area.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	Composite emission score
Fulton	878	5,105	336	692	12.0
Lucas	31,000	36,975	1,370	1,702	69.2
Wood	1,410	8,822	466	1,413	18.8

Hancock	567	4,351	342	1,036	11.1
Henry	3,139	2,547	185	662	6.3
Hillsdale, MI	1,286	3,270	245	812	8.2
Ottawa	1,544	5,031	403	687	13.0
Putnam	306	2,749	237	935	7.4
Sandusky	2,937	8,288	300	1,170	15.4
Seneca	826	4,575	281	951	10.4
Williams	469	3,600	196	634	7.8

Urban increment:

Total mass= 4.8 $\mu\text{g}/\text{m}^3$:

0% sulfates; 64% nitrates; 36% carbon; 0% crustal.

Urban site=390950026;

Rural site=QUCI1 (Quaker City)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Lucas	15.1 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Fulton	42,573	105
Lucas	453,506	1334
Wood	122,387	198

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Fulton	5,825	28	672

Lucas	19,011	9	4,324
Wood	19,773	32	1,400

Factor 5. Expected growth:

County	Percent growth 1990-2000
Fulton	9
Lucas	-2
Wood	7

Factor 6. Meteorology:

County	Average percent of wind direction by quadrant			
	Northwest	Southwest	Southeast	Northeast
Fulton	25	41	16	18
Lucas	24	41	16	19
Wood	24	41	16	18

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Toledo Metropolitan Area Council of Governments (TMACOG) is the Metropolitan Planning Organization (MPO) for Fulton, Lucas, Ottawa, Sandusky, and Wood Counties in Ohio.

-Source: TMACOG web page, <http://www.tmacog.org/>

This area's ozone nonattainment area consists of the following counties:

-Lucas and Wood

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.10 Wheeling Area

Discussion:

The only Ohio county in the metropolitan area is Belmont County. This county contains higher emissions due in part to the R.E. Burger power plant. This county was also included as part of the ozone nonattainment area and contains the largest county population in the metropolitan area. There are four Ohio counties adjacent to the metropolitan area, namely Guernsey, Harrison, Monroe, and Noble Counties. These counties are excluded due to lower emissions, population and VMT.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	Composite emission score
Belmont, OH	51,374	13,036	734	1,667	29.5
Ohio, WV	514	3,609	192	135	5.5
Marshall, WV	113,921	44,521	1,319	3,417	65.0
Greene, PA	217,794	61,402	2,723	7,529	99.2
Guernsey, OH	1,164	5,643	229	261	7.3
Harrison, OH	258	712	70	116	1.8
Monroe, OH	4,532	2,809	162	504	5.5
Noble, OH	144	1,622	87	127	2.5
Wetzel, WV	698	4,323	160	79	5.2

Urban increment:

Total mass= 5.7 $\mu\text{g}/\text{m}^3$:

27% sulfates; 24% nitrates; 46% carbon; 3% crustal.

Urban site=421290008;

Rural site=DOSO1 (Dolly Sods /Otter Creek Wilderness)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Ohio, WV	15.2 $\mu\text{g}/\text{m}^3$

Marshall, WV	15.7 $\mu\text{g}/\text{m}^3$
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Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Belmont, OH	69,448	129
Ohio, WV	46,126	435
Marshall, WV	34,898	114

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Belmont, OH	5,667	20	1,066
Ohio, WV	2,964	15	437
Marshall, WV	5,233	37	233

Factor 5. Expected growth:

County	Percent growth 1990-2000
Belmont, OH	-1
Ohio, WV	-7
Marshall, WV	-5

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Belmont, OH	28	37	19	16
Ohio, WV	29	36	19	16
Marshall, WV	28	36	19	16

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Bel-O-Mar Regional Council and Interstate Planning Commission is the Metropolitan Planning Organization (MPO) for Belmont County, OH.

-Source: Bel-O-Mar Regional Council website, <http://www.belomar.org/>

The Ohio portion of this area's ozone nonattainment area consists of the following county in Ohio:
-Belmont

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.4.11 Youngstown-Warren Area

Discussion:

EPA agrees with the Ohio EPA's Option 2 recommendation to include Columbiana, Mahoning and Trumbull Counties as nonattainment. These counties all have significant emissions contributing to the violations in Mahoning County. There are no adjacent counties to this metropolitan area in Ohio that are not a part of another violating metropolitan area.

Ohio's submittal of September 1, 2004, urges EPA to designate Columbiana County as attainment. However, EPA finds that this county contributes a significant percentage of the emissions in the Youngstown-Warren Area. In addition, this county is surrounded by monitors showing violations, which suggests that Columbiana County (which has no monitoring data) may be experiencing concentrations above the standard.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SOx	NOx	Carbon	Crustal	composite emission score
Columbiana	1,291	5,825	442	696	15.9
Mahoning	3,511	12,210	920	804	31.2
Trumbull	30,327	19,010	1,217	1,365	52.9
Mercer, PA	874	7,459	412	760	16.7

Crawford, PA	1,231	8,034	413	772	17.3
Lawrence, PA	35,620	13,065	681	1,833	41.2

Urban increment:

Total mass= 4.2 $\mu\text{g}/\text{m}^3$:

11% sulfates; 30% nitrates; 49% carbon; 10% crustal.

Urban site=390990014;

Rural site=MKGO1 (M.K. Goddard)

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Mahoning	15.2 $\mu\text{g}/\text{m}^3$
Trumbull	15.0 $\mu\text{g}/\text{m}^3$

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2002 Population	Population Density
Columbiana	111,806	210
Mahoning	253,308	610
Trumbull	223,518	363

Factor 4. Traffic and commuting patterns:

County	Number	Percent	County VMT (Thousands)
Columbiana	9,090	18	928
Mahoning	22,894	21	2,576
Trumbull	12,347	13	2,108

Factor 5. Expected growth:

County	Percent growth 1990-2000
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Columbiana	4
Mahoning	-3
Trumbull	-1

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Columbiana	27	39	18	17
Mahoning	25	39	21	15
Trumbull	25	38	22	15

Factor 7. Geography/topography:

There are no geographical features (mountain ranges, abrupt changes in elevation, etc.) that affect this area. The State provided no information about geography/topography for this area.

Factor 8. Jurisdictional boundaries:

The Eastgate Regional Council of Governments (Eastgate) is the Metropolitan Planning Organization (MPO) for Mahoning and Trumbull Counties in Ohio.

-Source: Eastgate web page, <http://www.eastgatecog.org/>

The Ohio portion of this area's ozone nonattainment area consists of the following counties:

-Columbiana, Mahoning, and Trumbull

Factor 9. Level of control of emission sources:

The State provided no information about the level of control of emission sources for this area.

6.5.5 EPA 9-Factor Analyses for Wisconsin for Designation of Nonattainment Areas for PM_{2.5}

EPA is designating all Wisconsin counties as attainment/unclassifiable. The only area in or near Wisconsin with a monitored violation is the Chicago-Gary-Kenosha Area. Wisconsin did not provide a recommended list of designations in February 2004. Therefore, EPA sent the State a letter on June 29, 2004, stating an intent to designate Kenosha County nonattainment because this county is part of the Chicago-Gary-Kenosha metropolitan area and thus was presumptively part of the Chicago-Gary-Kenosha nonattainment area. Governor Doyle then sent EPA a letter on August 9, 2004, recommending that Kenosha County be designated attainment. The following discussion presents EPA's rationale for its designations in the Wisconsin portion of the Chicago-Gary-Kenosha Area.

6.5.5.1 Chicago-Gary-Kenosha Area

Discussion:

EPA reviewed the nine factors for the thirteen counties within the metropolitan area including Kenosha County in Wisconsin as well as all counties adjacent to the metropolitan area in order to determine the appropriate nonattainment area. There are violating monitors in Cook County, Illinois and in Lake County, Indiana. Kenosha County monitoring indicates that PM_{2.5} concentrations in the county are below the standard. The counties in Illinois and Indiana that are being designated as nonattainment include 90% of the metropolitan area emissions. Kenosha County emissions are relatively low and will continue to decrease as federally enforceable SO₂ and NO_x controls are installed at the Pleasant Prairie Power Plant operated by WE Energies. Furthermore, prevailing winds in Kenosha County are predominantly away from the violating monitors in the metropolitan area. Therefore, EPA agrees with Governor Jim Doyle's recommendation to designate Kenosha County as attainment/unclassifiable.

In Wisconsin, Racine and Walworth Counties are adjacent to the metropolitan area. Emissions are relatively low for these counties, and no other factor warranted designating these counties nonattainment. Therefore, the following data summaries for factors 3 through 9 do not address these counties.

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

County	SO _x	NO _x	Carbon	Crustal	Composite emissions score
Cook	61,676	195,428	10,110	8,268	33.0
De Kalb	445	4,885	384	1,875	1.0
Du Page	2,990	29,479	1,731	1,229	4.9
Grundy	6,149	9,589	563	1,235	2.1

Kane	1,395	9,490	1,047	2,326	2.8
Kankakee	551	6,628	490	1,720	1.4
Kendall	292	2,941	265	961	0.7
Lake	14,223	24,488	2,092	1,777	6.7
Mc Henry	637	5,834	564	1,992	1.6
Will	80,847	37,518	1,447	4,120	11.7
Lake, IN	50,110	72,142	5,708	7,588	19.5
Porter, IN	21,601	41,315	2,702	5,587	9.2
Kenosha, WI	33,122	27,469	770	1,236	5.4
Boone	849	2,188	215	834	0.6
Ford	219	1,462	216	1,280	0.6
Iroquois	458	4,177	452	2,290	1.3
La Salle	2,140	13,984	845	3,352	2.5
Lee	3,978	4,793	345	1,722	1.3
Livingston	503	4,686	485	2,413	1.3
Ogle	672	4,985	335	1,536	1.1
Winnebago	1,100	10,496	656	1,405	1.9
Benton, IN	101	1,326	215	724	0.5
Berrien, IN	1,390	10,269	740	1,340	0.6
Jasper, IN	34,435	23,020	668	1,838	5.2
La Porte, IN	10,974	19,681	826	1,643	3.3
Newton, IN	89	1,321	160	642	0.4
Pulaski, IN	111	1,187	196	667	0.5
St Joseph, IN	2,850	13,690	1,482	1,825	4.0
Starke, IN	100	2,852	188	551	0.5
White, IN	188	2,495	292	1,185	0.8
Racine, WI	2,309	7,252	662	890	1.9
Walworth, WI	866	5,693	470	908	1.3

Urban increment:

Total mass= 3.6 µg/m³

25% sulfates; 8% nitrates; 65% carbon; 2% crustal.

Urban site= 170310076;

Rural site= BOND1 (Bondville)

The counties in Illinois and Indiana that are being designated as nonattainment include 90% of the metropolitan area emissions. Kenosha County emissions are relatively low and will continue to decrease as federally enforceable SO₂ and NO_x controls are installed at the Pleasant Prairie Power Plant operated by WE Energies. (See Factor 9.) When controls are fully implemented in 2008, Kenosha County emissions are projected to drop to 6,626 tons per year for SO₂ and 11,727 tons per year for NO_x, based on maximum allowable emissions. The resulting composite emission score would drop from 5.4 to 2.7.

Factor 2. Air quality in potentially included versus excluded areas:

County	2001-2003 Design Value
Cook	17.3 µg/m ³
Du Page	14.4 µg/m ³
Kane	14.2 µg/m ³
Lake	12.8 µg/m ³
Mc Henry	12.7 µg/m ³
Will	12.8 µg/m ³
Lake, IN	17.7 µg/m ³
Porter, IN	13.8 µg/m ³
Kenosha, WI	11.7 µg/m ³
La Porte	13.6 µg/m ³
La Salle	14.1 µg/m ³
Winnebago	13.6 µg/m ³
St Joseph, IN	14.3 µg/m ³
Berrien, MI	12.7 µg/m ³

At 11.7 µg/m³, the design value for the Kenosha County monitor is well below the 15 µg/m³ standard, as is the design value for Lake County, Illinois, which is between the Kenosha County monitor and the violating monitor in Cook County, Illinois.

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

County	2003 Population	Population Density
Cook	5,377,507	5,684

De Kalb	91,561	144
Du Page	924,589	2,768
Grundy	38,839	92
Kane	443,041	850
Kankakee	104,657	154
Kendall	61,222	191
Lake	674,850	1,506
Mc Henry	277,710	460
Will	559,861	669
Lake, IN	487,016	980
Porter, IN	150,403	360
Kenosha, WI	154,433	566

Factor 4. Traffic and commuting patterns:

County	County VMT	Percent	Number
Cook	44,107,000	12	274,167
De Kalb	729,000	31	13,894
Du Page	6,609,000	40	186,686
Grundy	530,000	46	8,431
Kane	841,000	43	82,968
Kankakee	889,000	19	9,122
Kendall	278,000	67	19,070
Lake	3,549,000	32	100,810
Mc Henry	792,000	47	62,415
Will	2,136,000	55	131,834
Lake, IN	5,012,000	25	52,922
Porter, IN	1,680,000	36	25,819
Kenosha, WI	1,228,000	28	20,506

Factor 5. Expected growth:

County	Percent growth 1990-2000
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Cook	5
De Kalb	14
Du Page	16
Grundy	16
Kane	27
Kankakee	8
Kendall	38
Lake	25
Mc Henry	42
Will	41
Lake, IN	2
Porter, IN	14
Kenosha, WI	17

Factor 6. Meteorology:

	Average percent of wind direction by quadrant			
County	Northwest	Southwest	Southeast	Northeast
Cook	26	37	16	21
De Kalb	27	34	19	21
Du Page	26	37	17	21
Grundy	26	36	17	21
Kane	26	35	18	21
Kankakee	25	38	17	19
Kendall	26	36	17	21
Lake	26	37	17	20
Mc Henry	28	32	19	20
Will	26	37	17	21
Lake, IN	25	38	17	19
Porter, IN	25	38	18	19
Kenosha, WI	28	35	18	20

Approximately 72% of the time, the prevailing wind direction in Kenosha County is away from the violating monitors.

Factor 7: Geography/topography

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. The State of Wisconsin has no features that significantly influenced EPA's intended nonattainment areas.

Factor 8: Jurisdictional boundaries

Factor 9: Level of control of emission sources

The Pleasant Prairie Power Plant operated by WE Energies accounts for approximately 97% of the SO₂ and 78% of the NO_x emissions in Kenosha County. The facility is in the process of installing control equipment on its two coal-fired boilers which will result in reductions in excess of 80% for SO₂ and 70% for NO_x. Specifically, the facility is implementing the following federally enforceable controls¹:

- Selective catalytic reduction (SCR) was installed in 2003 on one coal-fired boiler, to meet an allowable rate of 0.100 lb/MMBtu on a 30 day rolling average. This results in over a 70% reduction in NO_x, comparing 2001 actual emissions to allowable emissions as of January 30, 2004.
- Contracts have been awarded for flue gas desulfurization (FGD) to be installed for SO₂ control on both of the facility's coal-fired boilers. Each unit will be subject to an allowable rate of 0.100 lb/MMBtu on a 30 day rolling average, resulting in greater than an 80% reduction comparing 2001 actual emissions to allowable emissions as of January 30, 2007 for one unit and January 30, 2008 for the other.

A contract is being finalized to install SCR on the remaining coal-fired boiler. NO_x emissions will be controlled to meet an allowable rate of 0.10 lb/MMBtu on a 30 day rolling average. This results in greater than 70% reductions when comparing 2001 actual emissions to allowable emissions as of January 30, 2007.

¹This level of control is reflective of requirements found in a consent decree that is not yet final but is under review by a circuit court judge. The level of control is reflected in a federally enforceable permit.

6.7 Region 7 Nonattainment Areas

6.7.1 EPA 9-Factor Analyses for Missouri for Designation of PM_{2.5} Nonattainment Areas

Recommendations:

MO-IL CMSA Area	EPA Recommendation	State Recommendation
Missouri	Nonattaining full counties: Franklin Jefferson St. Charles St. Louis St. Louis City	Nonattaining full counties: Franklin Jefferson St. Charles St. Louis St. Louis City

In Missouri the MO-IL St. Louis CMSA counties include Franklin, Jefferson, Lincoln, St. Charles, St. Louis, St. Louis City, and Warren Counties.

Analysis

The following is a brief summary of the 9-factor analysis for the Missouri portion of the MO-IL St. Louis C/MSA. Missouri counties that are in the CMSA are in **bold**; other counties are adjacent to the C/MSA counties.

Factor 1: Emissions

For this factor, EPA Region 7 looked at primary PM_{2.5}, SO₂, NO_x, carbon, and crustal PM_{2.5} emissions. An emissions score was developed for each county to serve as an indicator of the local PM_{2.5} contribution for the CMSA. The emissions score was derived as follows:

$$\begin{aligned} \text{Emissions Score} = & [(\text{county SO}_2 \text{ tons/CMSA SO}_2 \text{ tons}) * (\% \text{ sulfate of urban excess PM}_{2.5})] \\ & + [(\text{county NO}_x \text{ tons/CMSA NO}_x \text{ tons}) * (\% \text{ nitrate of urban excess PM}_{2.5})] \\ & + [(\text{county carbon tons/CMSA carbon tons}) * (\% \text{ carbon of urban excess PM}_{2.5})] \\ & + [(\text{county crustal PM tons/CMSA crustal PM tons}) * (\% \text{ crustal of urban excess PM}_{2.5})] \end{aligned}$$

The emissions score incorporated an urban excess factor to evaluate the local-scale contribution for the pollutants listed below. This excess factor (local-scale contribution) was determined by comparing speciated pollutants measurements between the St. Louis (urban) monitor at Blair Street with the rural monitor at Mingo located in Stoddard County approximately 120 miles SSE of St. Louis. The local-scale contribution for each pollutant category is as follows:

Urban Excess (mass) – 6.2 ug/m³

- Nitrates - (29%)
- Sulfates - (8%)
- Total Carbon Mass - (58%)
- Crustal Material - (5%)

By evaluating the speciation data between these two monitoring sites, one is able to differentiate between regional and local source influences. Regional influences are seen predominantly in the summertime with sulfate sources (power plants), while during the fall and winter seasons, higher levels of total carbon and nitrates are seen from local sources.

The emissions score for all 12 counties (Missouri and Illinois) within MO-IL C/MSA add to 100. Counties adjacent to the C/MSA are also calculated an emissions score so that emissions from those counties can be compared to the CMSA counties.

The following table shows total emissions (in tons/year) and emission scores for Missouri counties that are included in the MO-IL St. Louis C/MSA and for those that are adjacent to the CMSA. (Date source: 2001 NEI)

County	direct PM2.5 (tons/yr)	SO ₂ (tons/yr)	NO _x (tons/yr)	Carbon PM2.5 (tons/yr)	Crustal/ other direct PM2.5 (tons/yr)	Emission Score	Cum Emission Score
St. Louis, MO	6,689	30,400	53,358	3,456	2,897	27.4	27.4
St. Louis City, MO	2,424	14,647	27,193	1,214	958	11.0	55.2
Jefferson, MO	4,870	52,671	13,612	1,160	3,291	10.4	65.6
St. Charles, MO	3,424	40,596	25,793	896	2,415	10.2	75.8
Franklin, MO	4,066	45,216	15,482	918	2,864	9.1	84.9
Lincoln, MO	1,650	221	2,935	273	1,358	2.1	93.8
Warren, MO	889	324	1,803	205	674	1.5	98.9
Crawford, MO	590	110	2,199	183	396	1.4	
Gasconade, MO	533	248	1,727	132	393	1.0	
Montgomery, MO	879	364	1,740	145	719	1.2	
Pike, MO	1,156	15,206	10,931	206	773	3.3	
St. Francois, MO	1,212	697	4,204	328	825	2.5	
* Ste. Genevieve, MO	1,308	9,205	18,027	255	940	2.7 to 4.2	
Washington, MO	467	152	1,161	137	322	1.0	

* -- Emissions in Ste. Genevieve County were adjusted to account for industrial growth from new permits and PSD applications received by the state of Missouri. This growth resulted in the cumulative emission score changing from 2.7 to 4.2.

A natural break was observed for Missouri counties with an emission score 9.1 and above. In the case of the MO-IL, the natural break CMSA county is Franklin Co., MO

(Emission Score = 9.1). Applied to Missouri, this process identifies St. Louis, St. Louis City, Jefferson, St. Charles, and Franklin counties in MO as candidates for a PM2.5 nonattainment designation (i.e., counties with emission scores ≥ 9.1), and, therefore, requiring further analysis of the remaining factors is required (see below).

Crawford, Gasconade, Montgomery, Pike, St. Francois, Ste. Genevieve, and Washington counties in Missouri are dropped from further analysis because (1) none of these counties contain violating PM2.5 monitors, (2) none were recommended for a nonattainment designation by the state, and (3) all have emission scores significantly below < 9.1 . The next closest county is Ste. Genevieve with an emission score of 4.2 based upon projected emissions from industrial growth. NO_x emissions increased for St. Genevieve from industrial growth by 12,000 tons/year, while SO₂ emissions increased by 4,000 tons/year.

Factor 2: Air Quality

County	2001-2003 design value (PM2.5 in $\mu\text{g}/\text{m}^3$)
St. Louis City, MO	15.2
Jefferson, MO	14.5
St. Charles, MO	14.3
St. Louis, MO	14.0

Based on the analysis for this factor, only one county, St. Louis City, shows a violation of the annual PM2.5 standard. The violating area (St. Louis City) must have a nonattainment designation. However, this factor alone is not sufficient to eliminate the other counties as candidates for nonattainment status.

Factor 3: Population Density and Urbanization

County	2002 Population (people)	2002 Pop Density (pop/sq mi)
St. Louis, MO	1,018,102	2,004
St. Louis City, MO	338,353	5,457
St. Charles, MO	303,030	540
Jefferson, MO	203,993	310
Franklin, MO	95,890	104

Factors 3-5 correlate very well with mobile source emissions, population and commuting activities. An evaluation of these factors and Vehicles Miles Traveled (VMT) data support the county emission scores in Factor 1. The national approach of utilizing emission scores outlined in Factor 1 supported the recommendations made by the state.

Factor 4: Traffic and commuting patterns

County	2002 VMT (1000 miles)	VMT Growth ¹ (1000 miles)	VMT % Change ²
St. Louis, MO	11,553	3,280	24
St. Louis City, MO	4,178	1,719	41

St. Charles, MO	2,738	577	21
Jefferson, MO	2,511	322	13
Franklin, MO	1,391	-263	-19

¹ 2002 to 2010

² 2002 to 2010 (as percentage of 2002 population)

Factor 5: Expected growth

County	2002 Population (people)	Population Growth¹ (people)	% Change²
St. Louis, MO	1,018,102	22,786	2
St. Louis City, MO	338,353	-48,496	-12
St. Charles, MO	303,030	70,976	33
Jefferson, MO	203,993	26,719	16
Franklin, MO	95,890	104	16

¹ 2002 to 2010

² Estimated change in population growth, 2002 to 2010 (as a percentage of 2002 population)

Factors 6-9 did not significantly influence the designation process.

Factor 6: Meteorology

An evaluation conducted by Region 7 included trajectory cluster analysis using sulfate, nitrate, and organic carbon PM_{2.5} speciation measurements for the Blair Street site in St. Louis. This analysis generates back trajectories from the HYSPLIT model to characterize meteorological events for 8 specific clusters. High nitrate events occurred from trajectories originating from the North – Northwest, which agrees with the atmospheric chemistry for nitrate formation that occurs during fall/winter cooling periods. High sulfate events occurred during the summer with trajectories occurring from the Ohio River Valley or upper Mississippi River Valley.

Factor 7: Geography/topography

The Missouri counties of the St. Louis MO-IL CMSA counties do not have any geographical or topographical boundaries limiting transport across this airshed. The only observation noted in our review was the noticeable gradient of PM_{2.5} measurements as you go from east to west possibly indicating a more significant source of PM_{2.5} sources from the East or Illinois side of the River. The critical monitor is located in Madison County, Illinois with a 2001-2004 design value of 17.5 $\mu\text{g}/\text{m}^3$. As you move from East to West, the ambient levels drop to 14 $\mu\text{g}/\text{m}^3$.

Factor 8: Jurisdictional boundaries

Jurisdictional boundaries did not play a role in determining nonattainment boundaries. Areas designated as 8-hour ozone nonattainment areas are also important boundaries for state air quality planning. Franklin, Jefferson, St. Charles, St. Louis, and St. Louis City were included in the nonattainment area associated with the St. Louis 8-hour ozone nonattainment area. A goal in designating PM_{2.5} nonattainment areas is to achieve a

degree of consistency with ozone NA areas. Comparison of ozone areas with potential PM2.5 NA areas, therefore, gives added weight to designation of the above counties.

Factor 9: Level of control of emission sources

A review of all the factors as well as the recommendations and supporting documentation from the state of Missouri did not identify any additional counties that should be excluded or included in the St. Louis PM2.5 nonattainment area. Based upon this review and the methodology established by the PM2.5 Review Team consisting of members from Regions 1-5 and 7-9 as well as representatives from the Office of Air Quality Planning and Standards, the following Missouri counties are recommended for nonattainment for PM2.5 for the St. Louis Metropolitan Area:

- St. Louis
- St. Louis City
- St. Charles
- Jefferson
- Franklin

6.8 Region 8 Nonattainment Areas

6.8.1 EPA 9-Factor Analyses for Montana for the Designation of PM2.5 Nonattainment Areas

Based on air quality data for 2001-2003, the PM2.5 monitor at the Libby Courthouse Annex is violating the annual PM2.5 standard. EPA utilized the 9 factors identified in the April 1, 2003 “Designations for the Fine Particle National Ambient Air Quality Standards” guidance to evaluate whether the surrounding rural counties around Lincoln, MT should be included as part of the nonattainment area. However, due to the topographical features and local meteorology within Lincoln County and more specifically around the Libby, Montana vicinity, several of the 9 factors were not significant for this particular nonattainment area when looking at adjacent counties to Lincoln County, MT. Lincoln County is considered a rural county, according to EPA’s April 1, 2003 “Designations for the Fine Particle National Ambient Air Quality Standards” which defines a rural area as counties or areas not included in or adjacent to urban areas (metropolitan statistical areas (MSA)). The adjacent areas to Lincoln County are the Canadian border to the North, Boundary and Bonner County, Idaho to the West, Sanders County, MT to the South, and Flathead County, MT to the East. Lincoln County contains a violating monitor located in the town of Libby. The Lincoln County PM2.5 nonattainment issue is unique in that the area of impact is localized within and around the vicinity of the town of Libby due to topographical features and meteorology in the area impacted by emissions.

Montana’s recommendation identifying the PM2.5 nonattainment area included part of Lincoln County (the town of Libby and vicinity). EPA initially responded to Montana’s recommendation stating that EPA agreed with Montana’s recommended nonattainment designation for Lincoln County but that EPA intended to modify Montana’s recommended boundary for the nonattainment area to cover all of Lincoln County. However, based upon supplemental information provided by Montana, EPA is identifying the boundary of this PM2.5 nonattainment area to include a part of Lincoln County as described further below.

The following is a brief summary of the 9 factor criteria for the Lincoln County, MT area and surrounding counties. These analyses were based on existing available data. The counties recommended as nonattainment are in bold.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

For this factor, EPA looked at SO₂, NO_x, carbon and crustal PM2.5 emissions. A weighted emissions score was applied to Lincoln County and the adjacent counties reflecting the speciation profile of Lincoln County versus the adjacent counties. Counties adjacent to the Lincoln County were assigned an emission score as a way to compare the emissions from those counties against Lincoln County emissions. The following table has the SO₂, NO_x, carbon, and crustal PM2.5 emissions and composite emission scores.

This information is from the 2001 NEI. (The recommended nonattainment area is in bold.)

County	SO₂ (tons)	NO_x (tons)	Carbon (tons)	Crustal PM_{2.5} (tons)	Composite Emission Score
Lincoln	257	3286	862	275	100
Flathead	1919	6651	1788	1904	257
Bonner	313	5324	1411	730	159.5
Boundary	114	1886	1431	760	134.4
Sanders	328	4543	605	151	88.2

Since Lincoln County is considered to be a rural county as defined in EPA's April 1, 2003 PM_{2.5} Designations Guidance and not a metropolitan statistical area, this factor did not play a significant role in the decision making process. Also, due to the topographical features and meteorology in Lincoln County (see factors 6 and 7 below) and more specifically surrounding Libby, MT where the PM_{2.5} problem is, EPA feels the surrounding counties emissions are not impacting the PM_{2.5} monitor located at the Libby Courthouse Annex.

Factor 2: Air quality in potentially included versus excluded areas

County	PM_{2.5} 2001-2003 design value
Lincoln	16.2*
Flathead	9.1
Bonner	8.0
Boundary	8.2
Sanders	6.2

* Lincoln County PM_{2.5} monitor is located at the Libby Courthouse Annex, Libby, MT.

All adjacent counties to Lincoln, MT are attaining the PM_{2.5} standard. This factor played a significant role in the decision making process.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The following table has the population and population density for Lincoln County and the adjacent counties.

County	2002 Population	2002 Population Density (pop. per square mile)
Lincoln	18,665*	5**
Flathead	77,240	15
Bonner	38,205	22
Boundary	10,085	8
Sanders	10,367	4

* Town of Libby, MT population: 2,626;

** Town of Libby, MT population density: 2,020 persons/square mile

The town of Libby, where the PM2.5 problem is located has a much higher population density than the remainder of Lincoln County or any of the surrounding counties. Also, due to the commuting patterns, topographical features and meteorology in Lincoln County (see factors 4, 6 and 7 below), EPA feels the adjacent county populations do not impact the PM2.5 monitor located at the Libby Courthouse Annex. This factor played a significant role in the decision making process.

Factor 4: Traffic and commuting patterns

Commuting Information:

Lincoln County, the design value county, has a total of 6,721 commuters.

- Commuters who remain in Lincoln County: 6,177

Flathead County, an adjacent county, has a total of 34,035 commuters.

- Commuters from Flathead County to Lincoln County: 85

- Commuters that remain in Flathead County: 32,956

Bonner County, an adjacent county, has a total of 15,570 commuters.

- Commuters from Bonner County to Lincoln County: 0

- Commuters that remain in Bonner County: 12,968

Boundary County, an adjacent county, has a total of 3,830 commuters.

- Commuters from Boundary County to Lincoln County: 10

- Commuters that remain in Boundary County: 3,310

Sanders County, an adjacent county, has a total of 3,903 commuters.

- Commuters from Sanders County to Lincoln County: 12

- Commuters that remain in Sanders County: 3,337

The following table has the vehicle miles traveled (thousand miles) for Lincoln County and the adjacent counties.

County	VMT
Lincoln	231
Flathead	756
Bonner	442
Boundary	139
Sanders	93

Based on the analysis for this factor there are no adjacent counties impacting the PM2.5 monitor located at the Libby Courthouse Annex. This factor played a significant role in the decision making process.

Factor 5: Expected growth

The following table has the population and population growth figures for Lincoln County and the adjacent counties. (Nonattainment counties are in bold.)

County	2002 Population	Population Density	Area (sq. mile)	Growth (90-00)	% Change (90-00)
Lincoln	18665	5	3613	1356	8
Flathead	77240	15	5099	15253	26
Bonner	38205	22	1738	10213	38
Boundary	10085	8	1269	1539	18
Sanders	10367	4	2762	1558	18

Based on the analysis for this factor, there is no significant growth, on either an absolute or a percentage basis, to indicate a contribution to the air quality in Lincoln County. This factor did not play a significant role in the decision making process.

Factor 6: Meteorology

Libby Montana is located in the northwestern part of the state in a narrow north-south oriented valley. The ridgetops surrounding Libby are approximately 4,000 feet higher

than the town. There are no other towns or large emissions sources immediately upwind, so transport of high background concentrations into Libby is considered unlikely. The highest PM_{2.5} concentrations in Libby generally occur during the months of November through February. During the summer months concentrations typically average less than half the level of the annual PM_{2.5} NAAQS, while winter concentrations may double the NAAQS. The much higher concentrations in winter are related to stagnant weather conditions dominated by light winds and strong temperature inversions. These meteorological conditions may trap emissions within the valley for many days. No recent meteorological data is available for Libby, however, data from Kalispell, MT show calm wind conditions occur 35 percent of the time in the winter months and only 15 percent of the time in the spring and summer. Vertical temperature soundings at Great Falls in Western MT also show a very high frequency of surface temperature inversions in the winter.

Due to the meteorology conditions in the town and surrounding vicinity of Libby and due to the topographical features within Lincoln County and more specifically around Libby (see factor 7 below), that create stagnant weather conditions, EPA feels the adjacent counties do not impact the PM_{2.5} monitor located at the Libby Courthouse Annex and that the nonattainment problem is a localized PM_{2.5} problem.

County	Prevailing Wind Directions (%)			
	NW	SW	SE	NE
Lincoln	14	37	22	26
Flathead	21	34	22	24
Bonner	14	42	20	24
Boundary	12	40	22	27
Sanders	26	28	24	22

This factor played a significant role in the decision making process.

Factor 7: Geography/topography

Lincoln County, MT

Lincoln County has a land area of 3,675 square miles. The area of concern showing high PM_{2.5} concentrations is located within and around the Libby, Montana vicinity. Lincoln County has numerous geographical or topographical boundaries limiting its airshed to a very narrow valley including the surrounding vicinity of Libby. The town of Libby has a total area of 1.3 miles. As of the 2000 census, there are 2,626 people, 1,132 households, and 669 families residing in the city. The elevation for the town of Libby is 2,601 feet. The ridgetops surrounding Libby are approximately 4,000 feet higher than the town. The town sits in a narrow valley that runs in a north-south direction (48°23'17" North,

115°33'13" West). The Kootenai River runs adjacent to the town in an east-west direction. The Kootenai Basin is largely mountainous and dominated by three major ranges. The Rocky Mountain Range and the Flathead Range constitute the eastern boundary; the Purcell Range roughly bisects it from north to south. The Selkirk and Cabinet Ranges mark the western boundary. Elevations reach a maximum of about 12,000 feet with most summit elevations between 6,000 and 7,500 feet. Except for a few areas, the entire watershed is heavily forested (practically all of Lincoln County and a large portion of the surrounding counties consists of National Forest land). The Kootenai River has its origins in British Columbia's Kootenay National Park in Canada. From there it flows 485 miles into northwest Montana and through the towns of Libby and Troy. From there it flows into northern Idaho, then back into Canada and Kootenay Lake. Ultimately it joins with the Columbia River. Sixteen miles north of Libby, the river is held back by Libby Dam, creating a 90-mile long reservoir that reaches into Canada. The river drops less than 1,000 feet (305 meters) in elevation from Canal Flats to Kootenay Lake, a distance of over 300 miles (480 km). However, even along the river's slow meandering course, valley-bottom widths are generally less than two miles and are characterized by tree-covered rolling hills with few grassland openings.

Due to the topographical features and meteorological data (see factor 6 above) within and surrounding the vicinity of Libby resulting in stagnant weather conditions trapping emissions in the valley, EPA feels the adjacent counties do not impact the PM2.5 monitor located at the Libby Courthouse Annex. Emissions from adjacent counties would have to traverse one or more major mountain ranges, in some cases against the prevailing wind direction, in order to impact the town of Libby.

This factor played a significant role in the decision making process.

Factor 8: Jurisdictional boundaries

No areas in Montana or Idaho were designated nonattainment for the 8-hour ozone standard on April 15, 2004.

The town of Libby and vicinity within Lincoln County are designated nonattainment for PM10.

Due to the fact that the town and surrounding vicinity of Libby, Montana was designated nonattainment for PM10 and did not include the surrounding counties around Lincoln, MT, EPA believes this factor plays a significant role in the decision making process.

Factor 9: Level of control of emission sources

The following are sources located in Lincoln County, MT but are not considered major PSD sources.

- Plum Creek Northwest Lumber, Inc. (Ksandka Sawmill), Fortine, MT
- Eureka Pellet Mills, Eureka, MT

- Genesis Inc. (Troy Mine), Troy, MT
- Lone Pine Timber Industries, Eureka, MT
- Stimson Lumber Mill, Libby, MT (closed - Spring, 2003)

Due to the topographical features and meteorology in Lincoln County (see factors 6 and 7 below) and more specifically surrounding Libby, MT where the PM_{2.5} problem is located, EPA believes this factor does not play a significant role in the decision making process.

6.8.2 Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

Background: In a letter dated February 25, 2004, the Governor of Montana submitted to EPA a letter recommending that the PM_{2.5} nonattainment boundary for Lincoln County, MT be designated as a partial county. The Governor's letter did not provide a specific justification for a partial county recommendation or identify what the partial county boundaries would be for Lincoln County. On June 29, 2004, EPA responded to Montana's recommendation stating that EPA agreed with Montana's recommended nonattainment designation for Lincoln County but that EPA intended to modify Montana's recommended boundary for the nonattainment area and designate the entire Lincoln County area as nonattainment for the PM_{2.5} national ambient air quality standards.¹ In two follow-up letters from Montana dated June 25, 2004 and September 7, 2004, Montana identified specific PM_{2.5} nonattainment boundaries for Libby, MT along with a technical justification for the less-than-county request.

EPA's Recommended Change: Based upon EPA's review of Montana's letters dated June 25, 2004 and September 7, 2004 and subsequent discussions EPA has had with the Montana Department of Environmental Quality (MT DEQ), EPA is modifying our original recommendation and identifying the PM_{2.5} nonattainment boundary area as follows: 600,000mE, 5,370,000mN east to 620,000mE, 5,370,000mN south to 620,000mE, 5,340,000mN west to 600,000mE, 5,340,000mN north to 600,000mE, 5,370,000mN as identified in Montana's September 7, 2004 letter. EPA believes these boundaries are reasonable for the following reasons:

¹ EPA's April 1, 2003 "Designations for the Fine Particle National Ambient Air Quality Standards" which states: "When a rural monitor violates the standard, EPA intends to apply a presumption that the nonattainment area shall include the full county in which the monitor is located. EPA will consider recommendations to adjust rural area nonattainment boundaries based on the same factors as it applies to urban areas, as discussed in question 5 above. Using these factors, a State or Tribe that recommends that a smaller area should be designated nonattainment should provide convincing evidence that the monitor is not representative of the full county, that the excluded portions of the county are not source areas contributing to the nonattainment, and that the excluded portions of the county are meeting the standard. Similarly, a State or Tribe may recommend that a larger area be designated nonattainment based on technical information relevant to these factors. Nevertheless, as discussed above, if nonattainment is demonstrably very localized and is attributable to localized sources, EPA intends to establish nonattainment area boundaries based on a case-specific evaluation of the nature and extent of the problem."

1. As stated under factors 6 and 7 of EPA's factor analysis for Lincoln County, meteorology and geographical/topographical features within and surrounding the town of Libby played a significant role in the decision making process and in EPA's consideration to modify the nonattainment boundary to only include the town of Libby and surrounding vicinity. (See Factors 6 and 7 for more details.)
2. The MT DEQ conducted a winter monitoring study in the Libby, Montana area from November 2003 through March 2004. This information was submitted to EPA in MT DEQ's June 25, 2004 PM2.5 nonattainment boundary area recommendation for the town of Libby. The monitoring study showed that within the "T" shape basin where Libby Creek flows into the Kootenai River, significant drops in PM2.5 occur along the northwestern edge of the Libby valley as well as the northeastern edge of the valley. Wind speed results showed that there is very little wind in the Libby area during winter confirming that much higher concentrations in winter are related to stagnant weather conditions dominated by light winds and strong temperature inversions. As a result, meteorological conditions may trap emissions within the valley for many days. In MT DEQ's June 25, 2004 recommendation, MT DEQ acknowledged in the boundary analysis that while monitoring was not conducted further south than 3 miles from the town's center, MT DEQ was confident that the boundary that they recommended in their June 25 letter adequately surrounds the source area for the Libby PM2.5 nonattainment area. EPA disagreed with MT DEQ's southern boundary recommendation and in further discussions with MT DEQ, came to an agreement to extend the southern boundary area to include an additional 20,000 meter UTM Grids beyond what was recommended in MT DEQ's June 25, 2004 recommendation. This new boundary agreement is reflected in MT DEQ's letter dated September 7, 2004.

Due to the geographical/topographical features and meteorological data within and surrounding the vicinity of Libby and the study performed by MT DEQ, EPA feels the surrounding Lincoln County area outside the recommended boundary area does not impact the PM2.5 monitor located at the Libby Courthouse Annex. Emissions from the surrounding area within Lincoln County would have to traverse one or more major mountain ranges, in some cases against the prevailing wind direction, in order to impact the town of Libby.

6.9 Region 9 Nonattainment Areas

6.9.1 EPA 9-Factor Analyses for California for the Designation of PM_{2.5} Nonattainment Areas

This attachment to the modification letter to California contains EPA's preliminary evaluation of the state's recommended PM_{2.5} nonattainment areas. The recommended areas have been evaluated to determine if they follow the guidance provided in EPA's memo of April 1, 2003, "Designations for the Fine Particle National Ambient Air Quality Standards" from Jeffrey R. Holmstead, Assistant Administrator of EPA to Region Administrators.

In the April 1, 2003 memo, EPA states that for the purposes of designating PM_{2.5} nonattainment areas, it "presumes the entire MSA should be designated as nonattainment." In areas where there are multiple MSA's comprising one larger CMSA, the entire CMSA is the presumptive nonattainment area. This is based on the assumption that "violations of the PM_{2.5} NAAQS in urban areas may be presumed attributable at least in part to contributions from sources distributed throughout the Metropolitan Area."

The April 1, 2003 memo also states that in some cases, a State or Tribe may find that a violation of the PM_{2.5} standard is attributed to a significant metropolitan-scale component and yet believe that the Metropolitan Area does not appropriately define the area that should be designated nonattainment. EPA will consider requests for urban nonattainment area definitions that deviate from OMB's metropolitan area definitions on a case-by-case basis, considering the factors described below:

- Emissions in areas potentially included versus excluded from the nonattainment area
- Air quality in potentially included versus excluded areas
- Population density and degree of urbanization including commercial development in included versus excluded areas
- Traffic and commuting patterns
- Expected growth (including extent, pattern and rate of growth)
- Meteorology (weather/transport patterns)
- Geography/topography (mountain ranges or other air basin boundaries)
- Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)
- Level of control of emission sources

This attachment provides EPA's preliminary conclusions on California's recommended PM_{2.5} nonattainment areas with respect to EPA's April 1, 2003 guidance and the nine factors that must be considered when designating an area smaller than the Metropolitan Statistical Area.

California has recommended four PM_{2.5} nonattainment areas:

San Diego County
San Joaquin Valley
South Coast Air Basin
City Of Calexico, Imperial County, California

6.9.1.1 City of Calexico, Imperial County, California

There are three PM_{2.5} monitoring sites in Imperial County that are being used to determine this area's compliance with the NAAQS: Calexico - Ethel Street, El Centro, and Brawley. When the State submitted their recommendations for PM_{2.5} nonattainment areas they used data from the years 2000 through 2002. This data set indicated that the monitor at Calexico - Ethel Street was in violation of the annual PM_{2.5} NAAQS, with a 3-year annual average of 15.6 $\mu\text{g}/\text{m}^3$. The 2000-2002 three-year annual averages for El Centro and Brawley were 11.3 $\mu\text{g}/\text{m}^3$ and 14.7 $\mu\text{g}/\text{m}^3$, respectively.

When the 2003 data set became available, EPA recalculated the three-year annual averages for these monitoring locations. The most recent three years of data (2001-2003) indicate that while the three-year annual averages are close to the NAAQS, none of the sites exceed the annual NAAQS of 15 $\mu\text{g}/\text{m}^3$. The 2001-2003 year annual averages for Calexico, El Centro, and Brawley are 14.3 $\mu\text{g}/\text{m}^3$, 11.1 $\mu\text{g}/\text{m}^3$, and 14.5 $\mu\text{g}/\text{m}^3$ respectively.

It should be noted that the three monitoring sites did not have complete data sets for the 2001-2003 timeframe. In order to calculate the annual averages, EPA used the data substitution procedures in "Guideline on Data Handling Conventions for the PM NAAQS" (EPA-454/R-99-008, 1999).

6.9.1.2 San Diego Area

For the San Diego area, California recommended San Diego County as the PM_{2.5} nonattainment area. It includes the entire San Diego MSA.

The presumptive PM_{2.5} nonattainment area for San Diego is the San Diego MSA which includes San Diego County in its entirety.

The state's recommended PM_{2.5} nonattainment area is the same as EPA's presumptive nonattainment area.

Based on EPA's preliminary nine-factor analysis of California's recommendation, the presumptive nonattainment area and all adjacent counties, EPA agrees that California's recommendation is an appropriate nonattainment area. We have included comments on each factor in the pages following.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The presumptive boundary for the San Diego MSA is all of San Diego County. The State of California's recommended PM_{2.5} nonattainment area includes all of San Diego County, under the jurisdiction of the San Diego Air Pollution Control District. All potential emission sources in the San Diego MSA are included in the State's state recommended nonattainment area.

Adjacent counties to San Diego include Orange, Riverside, and Imperial Counties. Emissions generated in Orange County and Riverside County are included in the state recommended South Coast nonattainment area. Emissions originating in Imperial County do not contribute to elevated PM_{2.5} concentrations in San Diego County because Imperial County is separated from the San Diego area by the Laguna Mountains and many miles of desert.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 2: Air quality in potentially included versus excluded areas

The State's recommended boundary includes all violating monitoring sites. Violating monitors in Orange County and Riverside County are included in the state-recommended South Coast nonattainment area. There are no monitors in Imperial County that are currently in violation of either the 24-hour or annual PM_{2.5} NAAQS.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

All urbanized areas in the San Diego MSA are included in the state's recommended boundary and exist west of the Laguna Mountains, which bisect San Diego County from the north to the south. Urbanized areas in the adjacent counties of Orange and Riverside fall within the South Coast nonattainment area. The nearest urbanized area in Imperial County is the El Centro area which is separated from the San Diego area by the Laguna Mountains and many miles of desert. The El Centro area is currently not violating either the 24-hour or annual PM_{2.5} NAAQS.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 4: Traffic and commuting patterns

California's recommended PM_{2.5} nonattainment area, San Diego County, contains most of the VMT for the San Diego MSA. The amount of commuting traffic between San Diego and Orange or Riverside Counties is minimal and would not contribute significantly to air quality problems in San Diego County.

Because of the great distance between San Diego's urbanized areas and Imperial County, traffic and commuting patterns in Imperial County do not contribute to air quality violations in San Diego County.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 5: Expected growth (including extent, pattern and rate of growth)

Expected growth in the San Diego MSA will be contained in San Diego County. Expected growth in the adjacent counties of Orange and Riverside will be accounted for in the state-recommended South Coast nonattainment area. Growth in urban areas of Imperial County will not impact the San Diego MSA due to the great distance between these areas.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 6: Meteorology (weather/transport patterns)

The distribution of high PM_{2.5} concentrations within the San Diego area appear to be dependent upon calm-to-light winds and not as dependent upon wind direction. This suggests, as in the South Coast area, that there is enough activity within the San Diego area to generate high PM_{2.5} concentrations under many conditions and that high concentrations are not being caused by adjacent areas such as Orange, Riverside and Imperial Counties.

Because high PM_{2.5} concentrations occur during periods of calm-to-light wind conditions, the source of the high PM_{2.5} concentrations is likely within San Diego County itself. Under these conditions, it is unlikely that transport is bringing precursors into the County in levels significant enough to cause violations there.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The San Diego MSA is bounded by the Laguna Mountains to the east, which bisect San Diego County into a western portion, where the San Diego MSA is located, and an eastern portion which is rural and adjacent to Imperial County. To the west is the Pacific Ocean. Orange and Riverside counties are to the north and the U.S.-Mexico border forms the southern boundary.

Emissions originating in Imperial County do not contribute to elevated PM_{2.5} concentrations in San Diego County because Imperial County is separated from the San Diego area by the Laguna Mountains and miles of desert. While there could be some transport of emissions from Orange or Riverside counties, these areas are included in the state-recommended South Coast nonattainment area. Any emissions emanating from across the U.S.-Mexico border will need to be dealt with through the planning process.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The state recommended San Diego County nonattainment area is entirely under the jurisdiction of the San Diego Air Pollution Control District. To the north of San Diego County is Orange and Riverside Counties, which are included in the state-recommended South Coast nonattainment area. Imperial County to the east is under the jurisdiction of the Imperial County Air Pollution Control District. Imperial County contributes minimally if at all to PM_{2.5} air quality in San Diego County because of the distance between the San Diego urban area and Imperial County and the Laguna Mountain range which effectively separates the San Diego urban area from Imperial County.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 9: Level of control of emissions sources

Imperial County does not contribute to violations in San Diego County because of the low level of emissions in the western half of Imperial County, the intervening mountains (extending to over 4000 ft. in height), and the prevailing westerly winds. There is no significant commute pattern linking the two areas, since the urbanized portions of San Diego and Imperial County are separated by more than 100 miles of relatively sparsely populated mountains and desert (the highway distance from San Diego to El Centro is 117 miles). The two counties are under separate air quality jurisdictions (San Diego County Air Pollution Control District and Imperial County Air Pollution Control District) and in separate State air basin planning areas (San Diego Air Basin and Salton Sea Air Basin). While the coastal portion of San Diego County is highly urbanized with a population of approximately 3,000,000, the entire Imperial County is rural and primarily agricultural, with a total County population of approximately 150,000 (population density of 35 per square mile). San Diego's average daily VMT is over 75,000,000, compared to Imperial County's average daily VMT of approximately 4,215,000.

6.9.1.3 San Joaquin Valley Area

For the San Joaquin Valley, California recommended the San Joaquin Valley (SJV) as the PM_{2.5} nonattainment area.

This area includes the SJV Air Basin portion of Kern County, and all of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties.

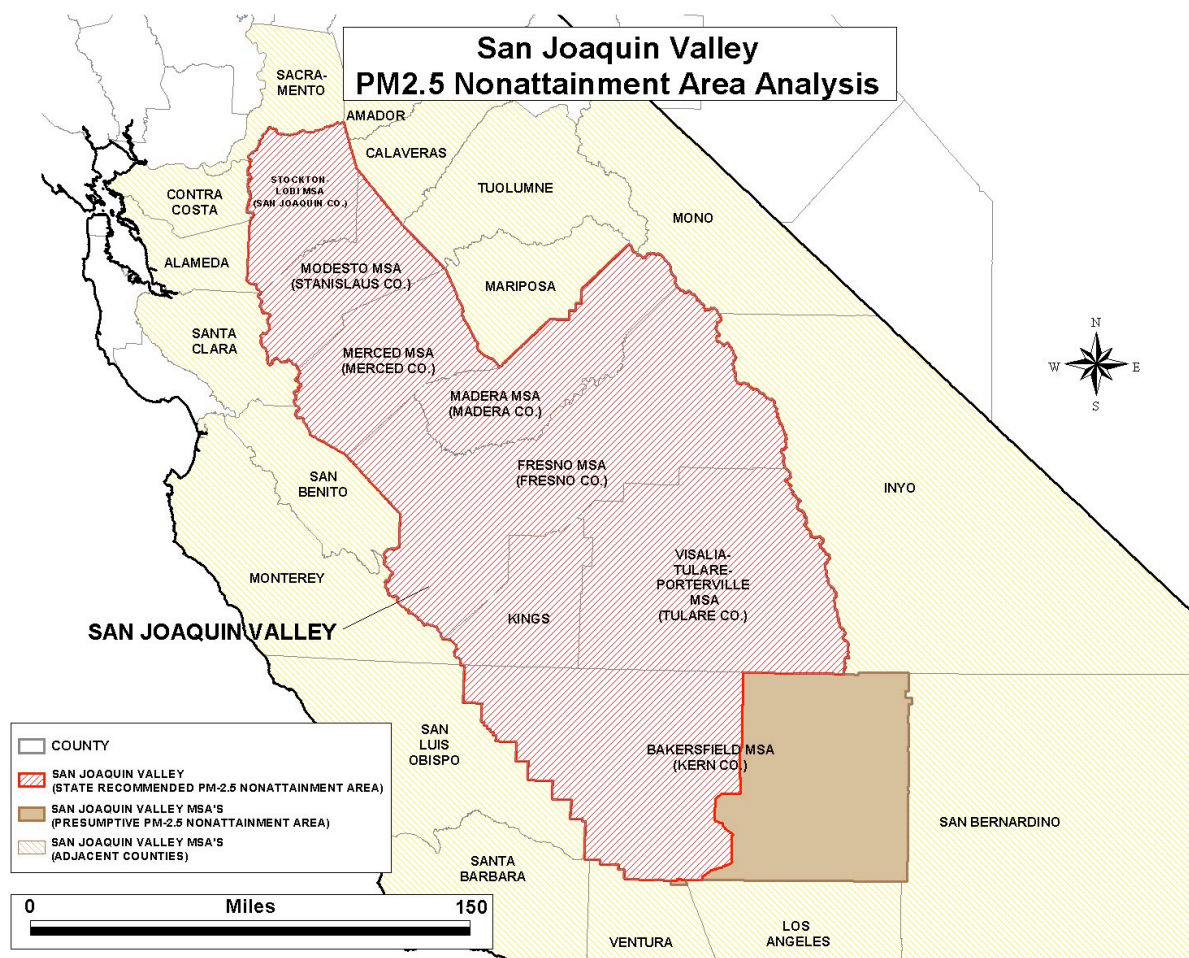
The presumptive nonattainment area includes the MSA's that have violations of the PM_{2.5} NAAQS. These include the following MSA's: Bakersfield (Kern County), Fresno (Fresno County), Merced (Merced County), Modesto (Stanislaus County), and Visalia-Tulare-Porterville (Tulare County).

The only portion of the presumptive nonattainment area excluded from the state's SJV recommendation is Eastern Kern County (EKC), which is in a separate air basin (Mojave Desert)

and is separated from the SJV by the Sierra Nevada and Tehachapi Mountains and significant distance.

The seventeen counties adjacent to the presumptive area and excluded from the state's recommendation (Alameda, Amador, Calaveras, Contra Costa, Inyo, Los Angeles, Mariposa, Mono, Monterey, Sacramento, San Benito, San Bernardino, San Luis Obispo, Santa Barbara, Santa Clara, Tuolumne, Ventura) are not in the SJV. These areas are either mountainous, separated from SJV by mountains, separated from SJV by significant distance or a combination of all of three. Thus, this indicates that these counties should not be included in the San Joaquin Valley nonattainment area.

Based on the following nine-factor analysis, EPA concurs with the State's recommendation to include San Joaquin and Kings counties and to exclude that portion of Kern County east of the Tehachapi and Sierra Nevada Mountains. The excluded portion of Kern County is a rural, desert area in a separate State air basin (Mojave Desert) from the San Joaquin Valley (SJV). We have included comments on each factor in the pages following.



Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The EKC emissions are a tiny fraction of SJV emissions, as shown in the table below.

Comparison of PM2.5 and PM2.5 Precursor Emissions Eastern Kern County vs. San Joaquin Valley Source: California Air Resources Board, 2004 California Almanac of Emissions & Air Quality, 2003 Estimated Annual Average Emissions in Tons per Day				
	VOC	NO_x	SO₂	PM2.5
Eastern Kern County	13.2	37.9	3.9	9.5
San Joaquin Valley	396.7	504.9	26.6	150.5

California's recommended PM2.5 nonattainment area only excludes the EKC which contributes only a tiny fraction of the emissions in the presumptive nonattainment area. This excluded area is separated from the SJV by the Tehachapi and Sierra Nevada mountains. Thus, the excluded area does not cause violations of the NAAQS in the SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the San Joaquin Valley nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM2.5.

Factor 2: Air Quality in potentially included versus excluded areas

California's recommended PM2.5 nonattainment area, the SJV, contains all violating monitors. Thus, violations are not occurring in the excluded portions of the metropolitan statistical area.

With respect to adjacent counties, the only monitors that violate the NAAQS in an adjacent county are in counties that have been recommended as part of the Los Angeles nonattainment area and are separated from the SJV by mountains.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM2.5.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The population of the EKC is approximately 120,000, compared to the SJV population of approximately 3,500,000. EKC has a very low population density (47 per square mile), degree of urbanization, and projected population growth, since the major source of EKC employment is the military.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the San Joaquin Valley by topography and/or distance. Based on their location

and this factor, these counties should not be included in the San Joaquin Valley nonattainment area.

EPA concludes that analysis of this factor supports designating the San Joaquin Valley as the nonattainment area for PM_{2.5}.

Factor 4: Traffic and commuting patterns

Average daily VMT for EKC is approximately 4,200,000 compared to SJV VMT of approximately 85,000,000. There is an insignificant volume of daily commute traffic between EKC and SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 5: Expected growth (including extent, pattern and rate of growth)

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 6: Meteorology (weather/transport patterns)

There are typically westerly winds in the southern SJV, which have the potential to carry some levels of PM_{2.5} precursors from SJV to EKC, although the mountains (elevations from 4,064 ft. at the Tehachapi Pass in the south to 9,875 ft. at Sunday Peak in the north) serve as a barrier to transport. Attainment of the PM_{2.5} and 8-hour ozone NAAQS within SJV will require adoption of Statewide and SJV controls at a level of stringency sufficient to ensure that transport from SJV to EKC will be further minimized. Transport from EKC to SJV is insignificant, because of the high mountains, the prevailing wind direction, and the insignificant level of emissions in EKC.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

California's recommended PM_{2.5} nonattainment area, the SJV, is bounded on the west by the Coast Ranges, on the south by the Tehachapi mountains, and on the east by the Sierra Nevada mountains. These mountains act as a barrier to pollution. Violations of the PM_{2.5} NAAQS are not caused by areas outside the SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The EKC is excluded from the SJV nonattainment area because it is under the jurisdiction of the Kern County Air Pollution Control District, and in a separate air basin, The Mojave Desert Air Basin. SJV nonattainment areas are in the same separate air basin and are all under the jurisdiction of the SJV Unified Air Pollution Control District. The California Air Resources Board coordinates Statewide planning, oversees implementation of intra-state planning requirements (including transport mitigation), and coordinates inter-basin planning, to the extent necessary.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 9: Level of control of emissions sources

Both EKC and SJV are designated nonattainment for the 8-hour ozone NAAQS (with the exception of the extreme northeastern corner of EKC, which is designated attainment). Control measures developed to attain the 8-hour ozone NAAQS in both the EKC and SJV will likely focus on coordinated State initiatives to reduce precursor emissions from mobile sources. The State also is aggressively pursuing Statewide controls on primary PM emitted by mobile sources as part of a diesel risk reduction initiative.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

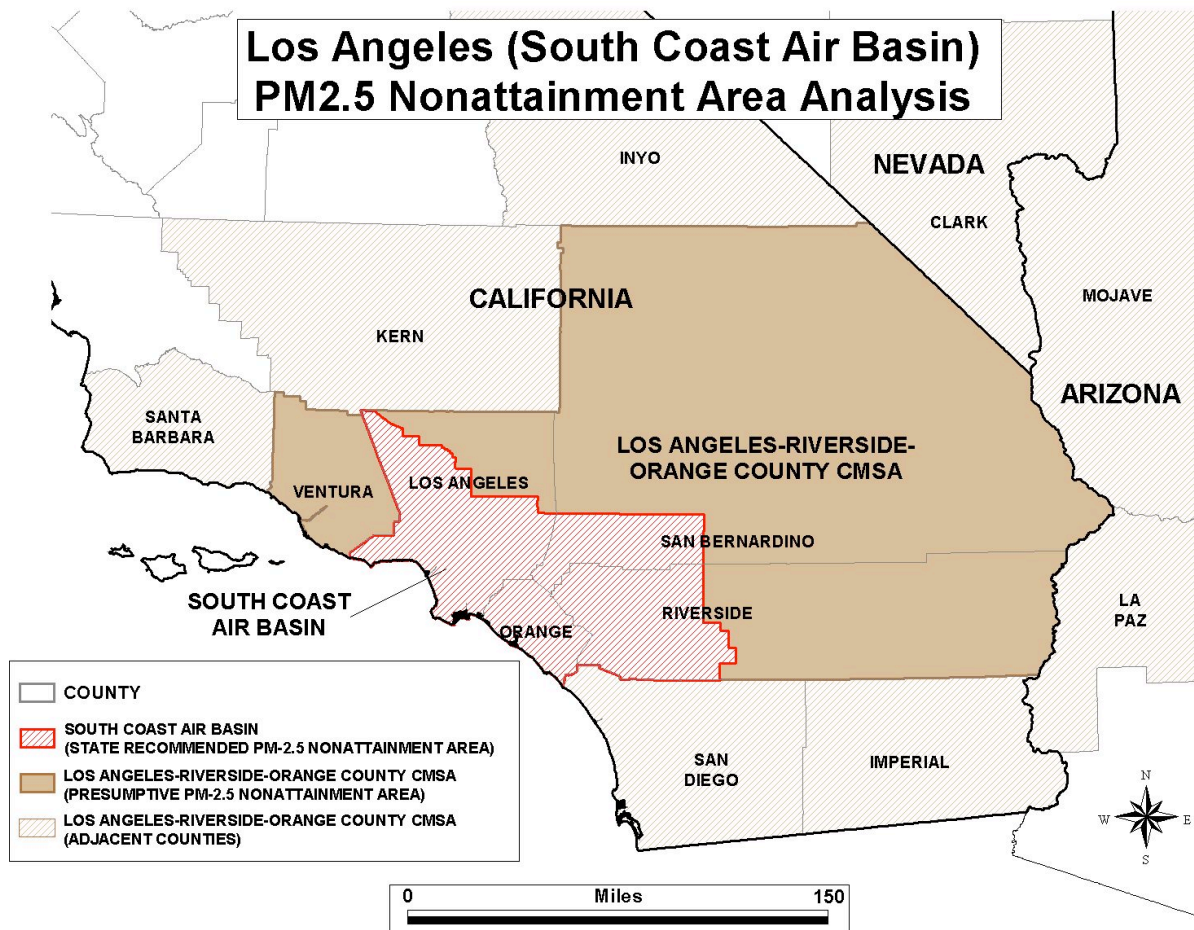
EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

6.9.1.4 South Coast Air Basin Area

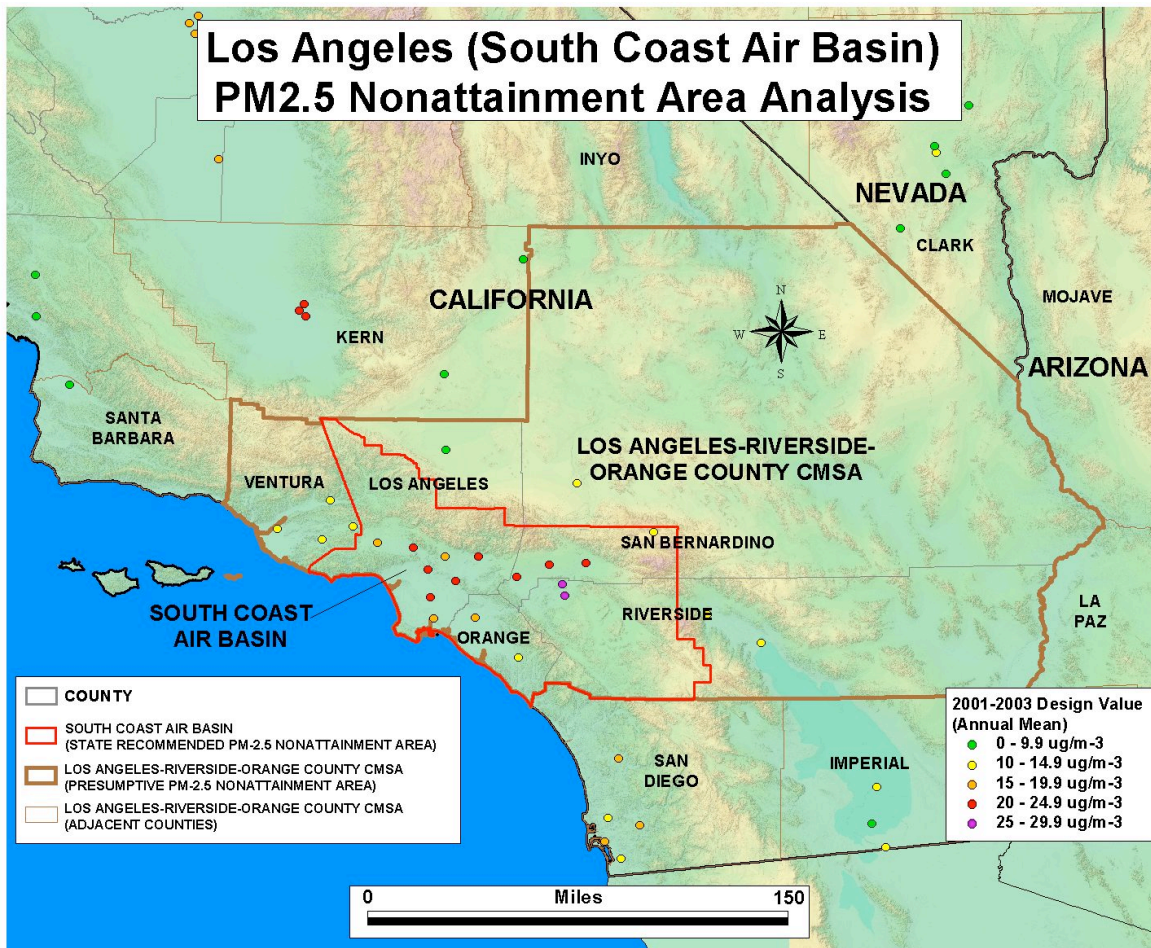
For the Los Angeles nonattainment area, California recommended the South Coast Air Basin as the PM_{2.5} nonattainment area. This area includes the South Coast Air Basin portions of Los Angeles, Orange, Riverside and San Bernardino counties.

The presumptive nonattainment area is the Los Angeles CMSA, which includes the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura.

Based on EPA's preliminary nine-factor analysis of California's recommendation, the presumptive nonattainment area and all adjacent counties, EPA agrees that California's recommendation is an appropriate nonattainment area for the Los Angeles area (note: The "Los Angeles" area consists of the urban areas of the city of Los Angeles and surrounding developed areas within the Los Angeles basin). We have included comments on each factor in the pages following.







Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

ST	COU	Total Emissions, 2001 (tons)									Weighted Emissions	
		PM	SO2	NOX	VOC	Amm	Carbon	Crustal	SO2 - Ex Pt	NOx - Ex Pt	L-Score	Cumulative L-Score
	C/MSA Total	69,872	22,119	530,780	465,495	61,094	41,151	23,840	10,900	476,347		
CA	Los Angeles	28,855	16,629	276,002	251,469	14,252	19,365	7,097	7,460	254,668	53.4	53.4
CA	San Bernardino	17,741	3,246	109,488	50,273	21,541	8,147	8,022	1,602	81,597	19.7	73.1
CA	Orange	8,585	1,129	73,846	89,987	7,330	5,714	2,466	974	71,374	12.7	85.8
CA	Riverside	10,476	674	52,809	46,232	16,164	5,280	4,921	575	51,315	10.0	95.8
CA	Ventura	4,215	441	18,635	27,529	1,807	2,645	1,334	289	17,393	4.2	100.0
NV	Clark	13,408	48,089	76,295	50,366	2,362	3,897	8,880	4,583	45,594	40.5	
CA	Kern	13,712	5,468	71,174	41,469	11,496	7,469	5,296	1,651	54,604	16.5	
CA	San Diego	12,683	2,007	76,341	95,353	6,015	7,297	4,827	1,748	73,046	14.8	
CA	Santa Barbara	4,201	1,301	14,919	24,755	2,032	2,764	1,292	280	13,355	4.5	
CA	Imperial	4,931	264	16,683	11,254	8,473	2,151	2,523	195	15,887	3.6	
AZ	Mohave	3,037	695	12,691	12,837	1,231	2,021	959	688	11,935	3.3	
CA	Inyo	2,764	394	1,694	3,247	747	2,133	564	173	1,424	2.0	
AZ	La Paz	810	142	3,100	2,407	503	319	483	142	3,062	0.7	
	Area Total	125,418	80,479	803,677	707,188	93,953	69,202	48,664	20,360	695,254		

2003 Estimated Non-Natural Emissions (tons per day)								
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)				non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)			
	Emissions (included area)				Emissions (excluded area)			
	ROG*	NOX	SOX	PM2.5	ROG*	NOX	SOX	PM2.5
Los Angeles	480.80	630.10	52.00	55.90	20.90	26.90	0.60	8.90
(As a percentage)	48.8%	48.0%	71.5%	34.7%	2.1%	2.0%	0.8%	5.5%
Orange	159.40	174.10	6.90	17.80				
(As a percentage)	16.2%	13.3%	9.5%	11.0%				
Riverside	79.00	125.00	1.90	16.00	17.20	29.90	0.40	7.40
(As a percentage)	8.0%	9.5%	2.6%	9.9%	1.7%	2.3%	0.6%	4.6%
San Bernardino	85.00	115.50	2.20	16.00	87.30	160.90	7.40	28.40
(As a percentage)	8.6%	8.8%	3.0%	9.9%	8.9%	12.3%	10.2%	17.6%
Ventura (land area)					54.71	50.75	1.31	10.80
(As a percentage)					5.6%	3.9%	1.8%	6.7%
Total	804.20	1044.70	63.00	105.70	180.11	268.45	9.71	55.50
(As a percentage)	81.7%	79.6%	86.6%	65.6%	18.3%	20.4%	13.4%	34.4%
*(excluding non-anthropogenic, aka "natural" emissions) ROG is defined as "Reactive Organic Gas"								

Factor 1 (continued): Emissions in areas potentially included versus excluded from the nonattainment area

In the review of this factor, data from EPA's Emission Inventory and California Air Resources Board (CARB) has been used. This data is displayed in Figures 1.1 and 1.2. The CARB data was useful because it allowed calculation of included and excluded areas' emission inventories. Also, EPA produced a weighted emission index, referred to as an "L-score" for each county, which is another method of examining emission levels in various counties.

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains most of the anthropogenic emissions in the Los Angeles CMSA. The only excluded areas with significant emissions are population centers (Palm Springs, Lancaster-Palmdale and Victorville-Apple Valley-Hesperia) significantly north or east of Los Angeles. These areas are separated from the Los Angeles area by the San Gabriel, San Bernardino and San Jacinto mountain ranges,

which contain the Los Angeles PM2.5 problem to the Los Angeles area. It is not a problem in the excluded areas and prevailing winds in the excluded areas are generally away from the Los Angeles area. Thus, emissions in the excluded areas are not causing or contributing to violations in the Los Angeles area.

The other excluded area is Ventura County, which produces a small portion of the emissions in the Los Angeles CMSA. Most of the development and population in Ventura County is located away from the Los Angeles area and much of the county is separated from the Los Angeles area by mountains.

Six counties adjacent to the Los Angeles CMSA (Clark, NV; Imperial, CA; Inyo, CA; La Paz, AZ; Mohave, AZ; and Santa Barbara, CA) are separated from the Los Angeles area by great distance, mountain ranges, desert or a combination of all three. Thus, this indicates that these counties should not be included in the Los Angeles nonattainment area.

Two counties adjacent to the Los Angeles CMSA are in separate nonattainment areas (e.g., Kern, San Diego) and are separated from the Los Angeles area by mountain ranges. Thus, they are not included in the Los Angeles nonattainment area for those reasons.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 2: Air Quality in potentially included versus excluded areas

ST	COU	Design Values					
		'01-'03		'00-'02		'99-'01	
	C/MSA Total	27.4	NA	28.9	NA	29.8	NA
CA	Los Angeles	22.8	NA	24.4	NA	25.9	NA
CA	San Bernardino	24.5	NA	25.9	NA	25.8	NA
CA	Orange	18.6	NA	20.3	NA	22.4	NA
CA	Riverside	27.4	NA	28.9	NA	29.8	NA
CA	Ventura	14.5	A	14.8	A	14.5	A
NV	Clark	11.0	A	10.9	A	11.0	A
CA	Kern	21.8	NA	22.8	NA	23.7	NA
CA	San Diego	15.9	NA	16.4	NA	17.1	NA
CA	Santa Barbara	9.5	A	9.9	A	13.0	a
CA	Imperial	9.1	A	15.6	NA	15.7	NA
AZ	Mohave						
CA	Inyo	6.2	A	7.8	a	7.6	a
AZ	La Paz						
	Area Total	27.4	NA	28.9	NA	29.8	NA

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains all violating monitors of the Los Angeles CMSA. Thus, violations are not occurring in the excluded

portions of the metropolitan area. With respect to adjacent counties, the only monitor that violates in an adjacent county is in Kern County which will be part of the SJV nonattainment area. This area is separated from the Los Angeles area by two mountain ranges.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

Population and Population Density				
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)		non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)	
	Population (included area)	Population Density (included area)	Population (excluded area)	Population Density (excluded area)
Los Angeles	*9,222,000	*3,693	*298,000	*190
Orange	2,846,289	3,607	---	---
Riverside	*1,199,000	*544	*347,000	*68
San Bernardino	*1,330,000	*1,057	*379,000	*20
Ventura	---	---	753,197	425
Total	*14,596,289	*2,164	*1,777,000	*65
Source: U.S. Census, 2000				
*figure based on estimate of partial county population and/or population density				

California's recommended nonattainment area has a population density of 2164 persons per square mile. The excluded portion of the Los Angeles C/MSA has a population density of 65 persons per square mile. The recommended nonattainment area contains the densely populated portions of the Los Angeles C/MSA. It also contains 89% of the C/MSA's population. Furthermore, the excluded areas consist of areas separated from the included areas by topography and/or sparsely populated deserts.

Counties adjacent to the C/MSA are separated from the Los Angeles area by deserts and great distance and are not included in the nonattainment area for that reason.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 4: Traffic and commuting patterns

Vehicle Miles Traveled				
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)		Non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)	
	Average Daily Vehicle Miles Traveled (included area)	VMT as a percentage of LA CMSA (included area)	Average Daily Vehicle Miles Traveled (excluded area)	VMT as a percentage of LA CMSA (excluded area)
Los Angeles	179,875,902	47.5	3,935,115	1.0
Orange	67,855,304	17.9	---	---
Riverside	37,266,851	9.8	18,478,676	4.9
San Bernardino	35,448,320	9.4	17,872,337	4.7
Ventura	---	---	18,215,281	4.8
Total	320,446,377	84.6	58,501,409	15.4

Appendix C: Surface Area, Population, and Average Daily Vehicle Miles Traveled.

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, contains most (84.6%) of the Vehicle Miles Traveled (VMT) for the Los Angeles C/MSA.

Other portions of the Los Angeles C/MSA outside the South Coast Air Basin account for 15.4% of the VMT for the Los Angeles CMSA. The areas outside the South Coast Air Basin in Los Angeles, Riverside and San Bernardino counties account for 10.6% of the VMT in the Los Angeles CMSA, however, these areas are, for the most part, only sparsely populated desert areas separated from the Los Angeles area by the San Gabriel, San Bernardino, and San Jacinto Mountains. The area outside the South Coast Air Basin in Ventura County accounts for 4.8% of the VMT in the Los Angeles CMSA. Most of the population in Ventura County is in the Ventura-Oxnard area. We believe that the distribution of VMT in Ventura County is similar to population, and thus that most of the VMT in Ventura County is in the Ventura-Oxnard area. This area is approximately 35 miles from the nearest violating monitor in the Los Angeles area and is separated from the Los Angeles area by the Santa Monica Mountains and Simi Hills and thus does not contribute to violations in the Los Angeles area. The Ventura County community closest to Los Angeles county is Simi Valley; however, its population is only 15% of the entire county and is separated from the Los Angeles area by the Santa Susana mountains, Simi Hills and other topography in the area. We believe that a similarly small proportion of Ventura County VMT is in Simi Valley. Based on VMT data for Ventura County, we believe that this factor does not show that Ventura areas are causing violations in the Los Angeles area.

There are several counties adjacent to the Los Angeles CMSA (Clark, NV; Imperial, CA; Inyo, CA; Kern, CA; La Paz, AZ; Mohave, AZ; Santa Barbara, CA; San Diego, CA). None of these counties will be included in the Los Angeles nonattainment area based on this factor because

these areas are too distant from the Los Angeles area, there is little, if any, commuting to the Los Angeles area from these counties, and they are separated by geography from the Los Angeles area. With respect to this factor, these areas do not cause or contribute to violations in the Los Angeles area.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 5: Expected growth (including extent, pattern and rate of growth)

ST	COU	Population & Area					Additional Population Info			
		2002	Area (sq miles)	Density '02	Growth '90-'00	Pct chng '9-'00	1990	2000	Growth '02-'10	Pct chng '02-'10
	C/MSA Total	17,044,188	33,966	502	1,842,116	13	14,531,529	16,373,645	1,842,116	13
CA	Los Angeles	9,806,577	4,060	2,415	656,174	7	8,863,164	9,519,338	656,174	8
CA	San Bernardino	1,816,072	20,062	91	291,054	21	1,418,380	1,709,434	291,054	20
CA	Orange	2,938,507	790	3,720	435,733	18	2,410,556	2,846,289	435,733	18
CA	Riverside	1,699,112	7,208	236	374,974	32	1,170,413	1,545,387	374,974	32
CA	Ventura	783,920	1,846	425	84,181	13	669,016	753,197	84,181	13
NV	Clark	1,522,164	7,911	192	634,306	86	741,459	1,375,765	634,306	86
CA	Kern	694,059	8,142	85	118,168	22	543,477	661,645	118,168	22
CA	San Diego	2,906,660	4,205	691	315,817	13	2,498,016	2,813,833	315,817	13
CA	Santa Barbara	403,084	2,739	147	29,739	8	369,608	399,347	29,739	8
CA	Imperial	146,248	4,175	35	33,053	30	109,303	142,361	33,053	30
AZ	Mohave	165,593	13,312	12	61,535	66	93,497	155,032	61,535	66
CA	Inyo	18,214	10,192	2	-336	-2	18,281	17,945	-336	-2
AZ	La Paz	19,517	4,500	4	5,871	42	13,844	19,715	5,871	42
	Area Total	22,919,727	89,142	257	3,040,274	16	18,919,014	21,959,288	3,040,274	16

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains most of the expected growth for the Los Angeles C/MSA. The areas in the Los Angeles C/MSA experiencing the greatest population growth during the 1990's were Riverside and San Bernardino counties with growth rates of 21% and 32% respectively. This high rate of growth is expected to continue in these counties. The recommended nonattainment area contains the portions of these counties on the edge and beyond the Los Angeles suburbs, so likely growth and expansion of the populated areas will occur within the recommended nonattainment area.

Ventura County is outside the recommended area, but inside the Los Angeles C/MSA. Ventura's growth rate is projected to be 9% through 2010 compared to the slowest growth areas, Los Angeles and Orange counties where growth rates of 8% are projected. Furthermore, Simi Valley, the area of Ventura in closest proximity to Los Angeles, has experienced a slowing of growth and appears to be largely built out. Thus, we do not expect high rates of growth in this area either.

Some counties adjacent to the C/MSA have high rates of growth and/or are projected to; however, these counties are separated from the Los Angeles area and its suburbs by some or all of the following: great distances, mountain ranges, deserts and sparsely populated areas and thus do not contribute or cause violations in the Los Angeles area.

Based on analysis of this factor, the recommended area includes the Los Angeles area and nearby areas of expected growth, so the recommended area is appropriate. EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 6: Meteorology (weather/transport patterns)

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, experiences high PM2.5 concentrations throughout the area and these concentrations may occur any time of year. Generally, the highest concentrations occur when winds are light and the atmosphere is stable.

Based on an analysis of wind strength and direction associated with PM2.5 concentrations, high concentrations are found throughout the South Coast Air Basin, and they tend to occur when winds are light, especially when the average wind speed is below 4 mph. At most monitors, high PM2.5 concentrations can occur regardless of the wind direction; in fact, most monitors have a bi-modal distribution of high PM2.5 concentrations with respect to wind direction. Most of these monitors have the same bi-modal distribution of average winds as well, generally from the west to northwest and also from the southeast. It appears that calm to light winds are a more important factor than the direction from which those winds originate.

The abundance of sources in the South Coast Air Basin and widespread distribution of high PM2.5 concentrations, dependent upon calm-to-light winds and not as dependent upon wind direction suggests that there is enough activity within the basin to generate high PM2.5 concentrations under many conditions and that high concentrations are not being caused by adjacent areas.

Because mountains nearly surround the South Coast Air Basin, and high PM_{2.5} concentrations occur during periods of calm-to-light wind conditions, the source of the high PM_{2.5} concentrations is likely within South Coast Air Basin itself. Under these conditions, it is unlikely that transport is bringing precursors into the basin in levels significant enough to cause violations there.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, is bounded on the southwest by the Pacific Ocean, on the west by the Santa Monica, Santa Susana Mountains and Simi Hills, on the north by the San Gabriel Mountains, on the northeast by the San Bernardino, on the east by the San Jacinto Mountains and on the south by the Santa Ana and coast range mountains. These hills and mountain ranges have elevations of 2,000 to well over 10,000 feet and act as barriers to pollution. Thus, violations in the Los Angeles area are not caused or contributed to by areas outside the South Coast Air Basin.

The excluded areas of the Los Angeles CMSA are separated from the Los Angeles area by the aforementioned mountains and also great distances, and/or deserts.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The five counties of the Los Angeles CMSA comprise 33,954 square miles. This area is equivalent to a square that is 184 miles long and 184 miles wide. The Los Angeles metropolitan and urbanized areas, although large, are only a small fraction of the entire Los Angeles CMSA, however, since Los Angeles' development occupies small portions of the area's very large counties, especially Riverside, San Bernardino and Ventura counties, and because CMSA's are comprised of units no smaller than counties (except in New England), this CMSA is much larger than the Los Angeles area. Although this is the presumptive nonattainment area, it is much larger than the Los Angeles area. Furthermore, it is much larger than the area with PM_{2.5} NAAQS violations and its accompanying source areas.

The CMSA encompasses fully five different counties, four different local air districts, coastal regions, alpine mountain regions as well as both low and high deserts.

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, is under the jurisdiction of the South Coast Air Quality Management District and includes Los Angeles and its adjacent urban areas, including those in other counties.

The other air districts within the Los Angeles C/MSA are separate agencies that due to geography and distance from Los Angeles, are not included in the Los Angeles nonattainment area.

To the west of the South Coast Air Basin is the Ventura County Air Pollution Control District, which has been a separate air quality planning entity, with its own board of elected officials and distinct responsibilities for all air quality planning, regulatory development, enforcement, and public participation activities, with the exception of those programs that are conducted under the jurisdiction of a State agency (mobile source standards, consumer products, pesticides, motor vehicle inspection and maintenance, etc.). Because of the long history of effective statewide planning and independent agency planning and because of differences in structure and approach between the air pollution control boards of the Ventura and South Coast, it is likely that compelling the two areas to share jurisdictional responsibility for air quality planning in an expanded nonattainment area would interfere with, rather than promote, harmonious and efficient air quality planning. Ventura County, although given an attainment designation for PM_{2.5}, would nonetheless continue its efforts to reduce direct and indirect emissions, as explained further in the analysis of Factor 9.

To the northeast of South Coast Air Basin are the Antelope Valley Air Pollution Control District and the Mojave Desert Air Quality Management District. These areas, although part of the Los Angeles CMSA, are separated from the Los Angeles area by the San Gabriel and San Bernardino mountain ranges, which have elevations over 10,000 feet. For that reason, these areas should not be included in the Los Angeles nonattainment area.

Moreover, the South Coast AQMD has a long history of analyzing and addressing existing and potential transport problems affecting downwind jurisdictions. Finally, coordinated rule development and transport mitigation occurs throughout California because of various provisions of the California Clean Air Act and subsequent legislation, along with the activities of the California Air Pollution Control Officers Association.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 9: Level of control of emissions sources

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, has an extreme designation for the 1-hour ozone standard. It has also been designated 'severe-17' for the 8-hour ozone standard. The area has some of the most stringent controls in the nation.

This factor is not relevant for other Los Angeles C/MSA areas in the Mojave Desert because they are separated from the Los Angeles area by mountains.

Ventura County is also in large part, separate from the Los Angeles area by topography and distance, with just one community near Los Angeles County (although this area, Simi Valley, is also separated from Los Angeles by a mountain pass). Nevertheless, the level of control of emissions sources in Ventura County is already high and expected to become more stringent,

even without a nonattainment designation in Ventura County. The nature of this control is summarized below:

- (1) Ventura County APCD and South Coast AQMD already have a very high level of control of PM precursor emissions, and the agencies are undertaking further progressive control strategy development activities to achieve further control as needed to attain and maintain the NAAQS.
- (2) Although it is not proposed to be designated nonattainment for the federal PM_{2.5} NAAQS, Ventura is designated nonattainment for the extremely stringent California PM₁₀ NAAQS and must therefore pursue feasible controls to reduce PM concentrations.
- (3) The County is also classified as a moderate nonattainment area for the Federal 8-hour ozone NAAQS. Since the two principal ozone precursors are also PM precursors in Ventura, the Ventura County APCD must continue to pursue stringent controls of NO_x and VOC in order to attain the 8-hour ozone NAAQS and these controls will benefit PM concentrations.
- (4) A large part of the PM precursors are under the State's jurisdiction, and the involved State agencies are planning to adopt additional stringent emission controls on a Statewide basis.
- (5) Attaining the PM_{2.5} NAAQS is expected to require the South Coast AQMD and the State to adopt a level of emissions control far in excess of what would be needed to ensure continued maintenance in Ventura County.

Thus, designating Ventura County as part of the South Coast PM_{2.5} nonattainment area is not likely to affect the level of emissions control applicable in the area or upwind in the South Coast.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

6.9.2 Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

TECHNICAL SUPPORT DOCUMENT

U.S. EPA Region 9

**Unclassifiable/Attainment Designation
for
Certain Areas in Southeastern San Diego County
for
The PM_{2.5} NAAQS**

Includes the Tribal Areas of The:

**Campo Band of Kumeyaay Indians
Cuyapaipe Band of Kumeyaay Indians
La Posta Band of Mission Indians
and
Manzanita Tribal Lands**

Southeastern San Diego County Unclassifiable/Attainment Areas for the PM2.5 NAAQS: Southeastern San Diego County Indian Reservations

[Note: The non-tribal areas in the vicinity of the designated unclassifiable/attainment areas are under California's jurisdiction and are part of a county-based area that we are designating as nonattainment. The State of California recommended designating all of San Diego County as a single PM2.5 nonattainment area. This recommendation is consistent with presumptions that follow our guidance on designating PM2.5 nonattainment areas. EPA agrees with the State of California's recommendation.]

This section applies to the portion of San Diego County listed below¹:

La Posta Areas #1 and #2
Cuyapaipe Area
Manzanita Area
Campo Areas #1 and #2

The four tribes that occupy these six areas did not submit recommendations to EPA.

These areas, which approximate the boundaries of the reservations of the four Tribes in southeastern San Diego County, are designated unclassifiable/attainment. Based on their location and other factors, we have determined that these areas do not violate the PM2.5 National Ambient Air Quality Standards (NAAQS). We also believe that these areas do not contribute to PM2.5 in other areas.

Although the areas are surrounded by a countywide nonattainment area, the United States has a unique legal relationship with tribal governments which derives from the United States Constitution, treaties, statutes, Executive Orders and court decisions, and is commonly referred to as the Federal government's trust relationship with Tribes. Guidelines for EPA's role in this relationship are outlined in the EPA Policy for the Administration of Environmental Programs on Indian Reservations ("1984 Indian Policy") which was issued in 1984 and has been reaffirmed by successor administrations.

The 1984 Indian Policy states that in the course of protecting human health and the environment, EPA should recognize tribal governments as sovereign entities with primary authority and responsibility for their members, and in keeping with this principle of tribal self-government, view tribal governments as the appropriate non-federal parties for making decisions and carrying out program responsibilities affecting their reservations and their members. Where tribes have not assumed delegable programs, EPA retains responsibility for managing federal programs on reservations. Correspondingly, as a matter of federal case law, absent an express delegation of authority by Congress to a State, States lack civil regulatory jurisdiction over tribes. Respect for, and protection of, this division of jurisdiction is an integral part of the federal trust responsibility.

¹ See "Southeastern San Diego County Unclassifiable/Attainment Areas For The PM2.5 NAAQS" and "Southeastern San Diego County Unclassifiable/Attainment Area Descriptions" in this document for further description of these areas.

Based on EPA's own evaluation of the nine factors for these four tribes in southeastern San Diego County, EPA believes that a designation of unclassifiable/attainment is appropriate and is consistent with the definition of nonattainment in §107(d)(1) of the Clean Air Act.

The justification for this designation is that these tribal areas are small in area, population and commercial development, and are located approximately 40 miles from San Diego and are separated from San Diego by mountain ranges, deserts and uninhabited land. Based on the nine-factor analysis presented below, EPA has concluded that activities within these tribal lands do not cause or contribute to PM_{2.5} in San Diego County, and thus are appropriately excluded from the surrounding San Diego County PM_{2.5} nonattainment area and designated as individual unclassifiable/attainment areas for the PM_{2.5} NAAQS. We also note that our decision to exclude these areas from the surrounding County-wide PM_{2.5} nonattainment area is consistent with the designations we recently made for these same areas for the 8-hour ozone NAAQS.

Nine-Factor Analysis:
Southeastern San Diego
Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The Campo, Cuyapaipe, La Posta, Manzanita tribal areas are designated as unclassifiable/attainment areas because their small size and eastern geographical position make them unlikely causes or recipients of San Diego area PM_{2.5} exceedances.

The tribal areas are small and have very low emissions; they are also in the southeastern corner of the county, generally downwind of areas with high observed annual PM_{2.5} levels. Therefore, they are not contributors to San Diego area PM_{2.5} exceedances.

Nor are the proposed tribal unclassifiable/attainment areas likely recipients of PM_{2.5} from the San Diego area. They are higher than the locations that experience high PM_{2.5}, and east of blocking mountain ranges.

Overall, PM_{2.5} formation is less well understood than ozone. In addition, since we are concerned here with the annual standard, one could not just examine a few extreme episodes, but instead must look at multiple conditions throughout the year. A fuller understanding may not be available until an attainment plan and modeling are developed. So, for purposes of determining the appropriate designation status for these tribal areas, this discussion will focus on the different potentials for pollutant transport to the areas during summer and winter.

When monthly average PM_{2.5} exceeds 15 $\mu\text{g}/\text{m}^3$, that month contributes to an annual average over 15, and hence to exceedances of the standard. While this can occur in May or June, concentrations exceed 15 more frequently and by a greater amount during the winter or wet season, roughly October through March. This is consistent with the expected enhancement of

PM2.5 levels during conditions of high humidity due to the sulfate formation in the aqueous phase.

As was described in EPA's designation for 8-hour ozone² page 34 (2004), summer temperature inversions, which restrict vertical dispersion and hence lead to high pollution levels, typically occur below or about equal to the elevation of Alpine, 2000 feet. This finding is based on meteorological modeling and analyses performed by the San Diego County Air Pollution Control District (APCD), as well as on ozone measurements that showed ozone confined to a layer at about this elevation. Unfortunately there is no PM2.5 data available from Alpine, but using similar reasoning as for ozone, this elevation limitation prevents significant transport of pollutants to the four tribal areas, which are 12 miles further inland, and range from 600 to 1300 feet higher. If a polluted layer were very thick, it could conceivably reach the lowest area, Campo #2, by way of the canyon containing Cottonwood Hauser Creek. However, the Campo areas are sheltered from the west by a westward spur of the Laguna Mountains, with accompanying complex terrain. Thus for the summer months, the tribal areas are unlikely to receive elevated PM2.5 levels.

For the winter months, when PM2.5 levels are higher, inversions occur more often at the surface than aloft, and tend to be less intense than in summer. The inversions aloft also tend to have a base at greater height above the ground, and so to be less constraining of pollutant dispersion.³ Surface-based inversions could hold pollutants near the ground. But in order for pollution generated in the more urban portions of San Diego County to reach the tribal areas, they must be transported far inland and uphill.

While winter winds are predominantly from the northwest, as in summer, they are slower. Under some conditions, flow can even be from the northeast, down the canyons instead of up, due to the Great Basin high pressure system that persists during winter (a strong version of this is the "Santa Ana" winds). Thus there is less tendency for pollution to be transported inland. Upslope flow that occurs due to surface heating could lead to pollutant transport uphill, but it is unlikely to extend to the tribal areas. The Great Basin high just mentioned would tend to weaken the upslope flow. In addition, in comparison to summer there is simply less heating to drive the flow. Finally, the position of the tribal areas essentially at the mountain range crest means that there is comparatively little slope to convert the expansion from heating into horizontal movement of polluted air upslope. Upslope flow from the east side of the range would also tend to retard upslope flow from the west. Therefore, during winter it is unlikely that elevated PM2.5 levels would reach these tribal areas.

One final piece of evidence to consider is the attaining air quality of Imperial County to the east. The nearest monitor east of the tribal areas is at El Centro, where the annual design value is 9.1 $\mu\text{g}/\text{m}^3$,⁴ well below the standard. While not completely conclusive due to the distance involved,

² U.S. EPA., "8-hour Ozone Designation, Technical Support Document", Chapter 3,

³ California Air Resources Board, "Climate of the San Diego Air Basin," December 1974.

⁴ U.S. EPA, Air Quality Subsystem (AQS), 2001-2003.

this reading is consistent with the idea that the mountain range central to San Diego County is a barrier to the movement PM_{2.5} from the urbanized western portion of the county, and that the tribal areas should not be part of the nonattainment area.

Factor 2: Air Quality in potentially included versus excluded areas:

To the west, the monitor nearest these tribal areas is El Cajon located approximately 30 miles west, which has a design value slightly above the PM_{2.5} NAAQS at 15.7 $\mu\text{g}/\text{m}^3$.⁵ To the east, the monitor nearest these tribal areas is El Centro located approximately 45 miles east, which has a design value well below the PM_{2.5} NAAQS, at 9.1 $\mu\text{g}/\text{m}^3$.⁶

EPA believes the air quality in these tribal areas attains the PM_{2.5} NAAQS because there are few sources in the area and it is separated from the violating monitors by both distance and topography.

The violating monitor at El Cajon is at approximately 435 feet elevation and is separated from these tribal areas by the Laguna Mountains. Between El Cajon and these tribal areas, the Laguna Mountains have elevations generally in the 3000-6000 foot range. The mountains nearest to the tribal areas are generally in the 4000-6000 foot range.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The tribal areas are not urbanized and are sparsely populated. Nearly all of the tribal lands discussed here have a population density of less than 50 persons per square mile. The maximum population density on these tribal lands is less than 500 persons per square mile, and even these areas account for only a negligible portion of the total tribal lands.

In addition to its sparse population, this area is at least 20 to 25 miles from areas with greater than 1000 persons per square mile.⁷

Factor 4: Traffic and commuting patterns

These tribal areas have little population and commuting data indicates that the average commuting time to work is 15-21 minutes. This data indicates that the average commuter from these tribal areas does not commute daily to the San Diego area.

This area includes rural portions of Interstate 8; however, there is little traffic on these portions of the highway compared to the San Diego area. Also, nearly all of this interstate is outside these tribal lands and thus out of tribal jurisdiction.⁸

⁵ AQS 2001-2003.

⁶ AQS 2001-2003.

⁷ U.S. Census, 2000.

Factor 5: Expected growth (including extent, pattern and rate of growth)

These areas are separated from the urbanized portions of San Diego County by distance and mountains. They are sparsely and lightly populated. There is no suburban or exurban growth on these tribal lands and there is a separation of 20 to 25 miles from these tribal areas to areas with population density of 1000 persons per square mile or greater. Because of this separation, expansion of the San Diego area and suburbs will not impact these areas in the near future. Because the population of these areas comprises such a small proportion of San Diego County as a whole, growth of these areas would account for only a negligible portion of the overall growth in San Diego County.⁹

Factor 6: Meteorology (weather/transport patterns)

[See discussion in Factor 1 for discussion of Meteorology (weather/transport patterns)]

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

These tribal areas are located 20 to 25 miles from the populated exurbs of San Diego. Within those 20 to 25 miles are the Laguna Mountains. The presence of these mountains separate these areas from the growing exurbs of the San Diego area. The elevations of the Laguna Mountains are generally 3000 to 6000 feet, with the higher peaks immediately adjacent to these tribal lands. These mountains form a barrier to air pollution and transport from the San Diego area to this region. These areas are not a significant source of emissions within the county, but due to their distance from the urbanized portions of San Diego County and the presence of the mountains between the two, any effect on the urbanized areas of the county from emissions generated by activities occurring on these tribal lands would be *de minimis*.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

These tribal areas are outside the jurisdiction of the State of California and San Diego County.

Factor 9: Level of control of emissions sources

EPA does not believe that there are any sources of concern in these tribal areas. With no sources of concern, the level of control in this area is not currently relevant and does not affect PM_{2.5} in San Diego.

⁸ U.S. Census, "Profile of General Demographic Characteristics: 2000" (for Campo, Cuyapaipe, and Manzanita Reservations; profile not available for La Posta Reservation, 2000).

⁹ U.S. Census, 2000.

APPENDIX A

PM2.5 Design Values for San Diego and Imperial Counties

PM2.5 Design Values ¹⁰

note: all values are annual mean with units $\mu\text{g}/\text{m}^3$

San Diego County

AQS ID	LOCATION	ANNUAL MEAN 2001-03
06-073-1002	Escondido	15.9 $\mu\text{g}/\text{m}^3$
06-073-1007	San Diego-12th St.	15.9
06-073-0003	El Cajon	15.7
06-073-0001	Chula Vista	14.6
06-073-0006	San Diego-Overland	12.8

Imperial County

AQS ID	LOCATION	ANNUAL MEAN 2001-03
06-025-1003	El Centro	9.1
06-025-0005	Calexico	14.4 (incomplete data)
06-025-0003	Brawley	10.6 (incomplete data)

¹⁰ U.S. EPA, Air Quality Subsystem (AQS), 2001-2003

APPENDIX B

Description: Southeastern San Diego County Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS

List of Areas: Campo unclassifiable/attainment areas #1 and #2, Cuyapaipe unclassifiable/attainment area, La Posta unclassifiable/attainment areas #1 and #2, and Manzanita unclassifiable/attainment area.¹¹

[Note: Longitude coordinates listed are in degrees west; Latitude coordinates are in degrees north]

CAMPO Unclassifiable/attainment AREAS #1 AND #2

CAMPO Unclassifiable/attainment AREA #1

Degrees Longitude	Degrees Latitude
-116.3938522	32.6008873
-116.3938522	32.6021004
-116.3938370	32.6023903
-116.3938065	32.6084938
-116.3938217	32.6146011
-116.3938141	32.6168747
-116.3937836	32.6211510
-116.3938065	32.6246223
-116.3938141	32.6250572
-116.3938446	32.6293945
-116.3938599	32.6313171
-116.3938141	32.6434937
-116.3938370	32.6458054
-116.3938599	32.6528740
-116.3938599	32.6603432
-116.3938370	32.6705208
-116.3937683	32.6748314
-116.3937302	32.6833992
-116.3937073	32.6893730
-116.3891220	32.6893845

¹¹ The boundaries for these designated areas are based on coordinates of latitude and longitude derived from EPA Region 9's GIS database and are illustrated in a map entitled "Southeastern San Diego County Unclassifiable/Attainment Areas for the PM-2.5 NAAQS," included in the Technical Support Document for the 2004 PM_{2.5} Designations. The map and this set of coordinates are available at EPA's Region 9 Air Division office. The designated areas roughly approximate the boundaries of the reservations for these tribes, but their inclusion in this table is intended for Clean Air Act planning purposes only and is not intended to be a federal determination of the exact boundaries of the reservations. Also, the specific listing of these tribes in this table does not confer, deny, or withdraw Federal recognition of any of the tribes so listed nor any of the tribes not listed.

-116.3851318	32.6893387
-116.3819046	32.6893616
-116.3761826	32.6893501
-116.3758469	32.6892662
-116.3734131	32.6892815
-116.3683548	32.6892548
-116.3672028	32.6892776
-116.3624268	32.6892624
-116.3624496	32.6958275
-116.3625107	32.7037697
-116.3624420	32.7122650
-116.3623810	32.7183075
-116.3623810	32.7192383
-116.3623886	32.7198639
-116.3624191	32.7258682
-116.3624344	32.7294846
-116.3624420	32.7343102
-116.3610229	32.7343369
-116.3530502	32.7343521
-116.3438492	32.7343788
-116.3372269	32.7344055
-116.3266830	32.7344131
-116.3175354	32.7343712
-116.3093948	32.7343826
-116.3092957	32.7306824
-116.3092194	32.7265244
-116.3106918	32.7265053
-116.3115997	32.7265167
-116.3116150	32.7219543
-116.3116837	32.7182999
-116.3116531	32.7167130
-116.3116837	32.7110214
-116.3117752	32.7053833
-116.3117752	32.7037506
-116.3117981	32.6973648
-116.3118744	32.6903038
-116.3119049	32.6893005
-116.3183517	32.6893005
-116.3274918	32.6892776
-116.3325958	32.6892509
-116.3326569	32.6920052
-116.3326645	32.6923180
-116.3333893	32.6923409
-116.3339844	32.6923256
-116.3360519	32.6923256
-116.3398743	32.6923218

-116.3409500	32.6923447
-116.3409805	32.6901436
-116.3410263	32.6892700
-116.3452530	32.6892471
-116.3511810	32.6892128
-116.3511658	32.6824760
-116.3511353	32.6747093
-116.3511200	32.6681786
-116.3511276	32.6616478
-116.3511276	32.6602020
-116.3511276	32.6548462
-116.3511581	32.6485939
-116.3511963	32.6456985
-116.3512039	32.6400795
-116.3511963	32.6340599
-116.3511734	32.6310959
-116.3511658	32.6280823
-116.3511658	32.6251755
-116.3511658	32.6250687
-116.3511353	32.6204147
-116.3510742	32.6167946
-116.3511276	32.6139297
-116.3511353	32.6067390
-116.3511581	32.6043663
-116.3629379	32.6033897
-116.3682709	32.6029549
-116.3682632	32.6114883
-116.3682709	32.6169205
-116.3741760	32.6169586
-116.3758469	32.6170387
-116.3843842	32.6170082
-116.3852768	32.6169930
-116.3852615	32.6113052
-116.3852692	32.6029587
-116.3852692	32.6024170
-116.3852921	32.6020126
-116.3852997	32.6016350
-116.3921661	32.6010284
-116.3938522	32.6008873

EXCLUDING:

Degrees Longitude	Degrees Latitude
-116.3432693	32.6991501
-116.3452988	32.6991692
-116.3474503	32.6991806

-116.3474350	32.7004051
-116.3474579	32.7027702
-116.3497925	32.7027740
-116.3511810	32.7027893
-116.3514023	32.7027893
-116.3517685	32.7027740
-116.3517227	32.7033768
-116.3517151	32.7038116
-116.3517075	32.7044868
-116.3516922	32.7075272
-116.3516846	32.7100334
-116.3511581	32.7100220
-116.3496399	32.7100334
-116.3474045	32.7100410
-116.3474121	32.7089043
-116.3474197	32.7064056
-116.3431625	32.7063751
-116.3431473	32.7055168
-116.3431702	32.7037964
-116.3431931	32.7003136
-116.3432007	32.6993828
-116.3432693	32.6991501

CAMPO Unclassifiable/attainment AREA #2

Degrees Longitude	Degrees Latitude
-116.4757996	32.6338768
-116.4758072	32.6354027
-116.4758301	32.6374321
-116.4777145	32.6373940
-116.4801788	32.6373405
-116.4801559	32.6390724
-116.4801559	32.6419983
-116.4801559	32.6445580
-116.4801865	32.6460190
-116.4801788	32.6482124
-116.4778137	32.6482468
-116.4711609	32.6484070
-116.4685593	32.6484604
-116.4628830	32.6485977
-116.4628677	32.6481361
-116.4628983	32.6449471
-116.4628830	32.6435204
-116.4628677	32.6412926
-116.4610519	32.6413460
-116.4585495	32.6413803

-116.4585419	32.6399918
-116.4585495	32.6376915
-116.4623947	32.6376266
-116.4672012	32.6376038
-116.4671707	32.6364365
-116.4671631	32.6339645
-116.4698563	32.6339149
-116.4715118	32.6338959
-116.4757996	32.6338768

CUYAPAIPE Unclassifiable/attainment AREA

Degrees Longitude	Degrees Latitude
-116.3594589	32.8148613
-116.3758469	32.8149872
-116.3773727	32.8149681
-116.3773575	32.8186951
-116.3758545	32.8187332
-116.3730850	32.8187523
-116.3731766	32.8223953
-116.3758469	32.8224297
-116.3773727	32.8223877
-116.3945618	32.8223038
-116.3948517	32.8368340
-116.4123306	32.8367386
-116.4123688	32.8439903
-116.4124451	32.8530045
-116.4124527	32.8585320
-116.4125443	32.8618469
-116.4126282	32.8657188
-116.4084244	32.8657303
-116.4024582	32.8657722
-116.3950500	32.8658104
-116.3777466	32.8657455
-116.3774643	32.8585205
-116.3758469	32.8586006
-116.3601303	32.8584747
-116.3596268	32.8445740
-116.3596115	32.8438034
-116.3597107	32.8406830
-116.3598175	32.8368759
-116.3596649	32.8295746
-116.3594971	32.8182030
-116.3594589	32.8148613

EXCLUDING:

Degrees Longitude	Degrees Latitude
-116.3774490	32.8331528
-116.3817902	32.8331566
-116.3818512	32.8404427
-116.3775253	32.8404121
-116.3774490	32.8331528

LA POSTA Unclassifiable/attainment AREAS #1 AND #2

LA POSTA Unclassifiable/attainment AREA #1

Degrees Longitude	Degrees Latitude
-116.4124756	32.7194672
-116.4124603	32.7229614
-116.4124603	32.7262383
-116.4124680	32.7283859
-116.4124603	32.7296181
-116.4124451	32.7304344
-116.4123917	32.7310486
-116.4122467	32.7324371
-116.4121933	32.7330780
-116.4121475	32.7335663
-116.4121094	32.7337990
-116.4120789	32.7339172
-116.4119797	32.7340736
-116.4119339	32.7342529
-116.4119034	32.7344437
-116.4118958	32.7346458
-116.4119186	32.7357597
-116.4119110	32.7375832
-116.4073563	32.7376099
-116.4073334	32.7377701
-116.4073029	32.7429504
-116.4073029	32.7447739
-116.4031143	32.7447662
-116.4030533	32.7484016
-116.4019165	32.7483749
-116.4008408	32.7483826
-116.3992996	32.7483826
-116.3983383	32.7483864
-116.3969803	32.7483940
-116.3963089	32.7483864
-116.3946991	32.7483940
-116.3935699	32.7484093

-116.3924103	32.7484550
-116.3907318	32.7484818
-116.3884659	32.7485428
-116.3858948	32.7486076
-116.3828659	32.7486839
-116.3806458	32.7487526
-116.3797913	32.7487869
-116.3791351	32.7488022
-116.3774567	32.7488289
-116.3774719	32.7461090
-116.3758469	32.7461319
-116.3734589	32.7461510
-116.3734436	32.7488289
-116.3675156	32.7488518
-116.3610306	32.7488747
-116.3609924	32.7480240
-116.3610306	32.7452621
-116.3734741	32.7452507
-116.3734512	32.7415466
-116.3669434	32.7415543
-116.3609619	32.7415657
-116.3610306	32.7411308
-116.3610229	32.7343369
-116.3624496	32.7343407
-116.3624344	32.7294846
-116.3624191	32.7258682
-116.3623886	32.7198639
-116.3708572	32.7197227
-116.3758316	32.7196426
-116.3784943	32.7196579
-116.3839035	32.7196350
-116.3875351	32.7196198
-116.3911743	32.7196007
-116.3941879	32.7195473
-116.3970032	32.7195587
-116.3989334	32.7195625
-116.4012909	32.7195511
-116.4023514	32.7195320
-116.4040070	32.7195320
-116.4072418	32.7195053
-116.4124756	32.7194672

LA POSTA Unclassifiable/attainment AREA #2

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.4203491	32.7591209
-116.4203339	32.7655792
-116.4203262	32.7699738
-116.4160233	32.7700539
-116.4160538	32.7664719
-116.4117279	32.7666054
-116.4117584	32.7629204
-116.4117889	32.7593193
-116.4203491	32.7591209

MANZANITA Unclassifiable/attainment AREA

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.3610229	32.7343369
-116.3610306	32.7411308
-116.3609619	32.7415657
-116.3607101	32.7415619
-116.3605652	32.7415695
-116.3605957	32.7435303
-116.3606262	32.7452698
-116.3610306	32.7452621
-116.3609924	32.7480240
-116.3610306	32.7488747
-116.3610229	32.7496910
-116.3609543	32.7500534
-116.3608856	32.7587395
-116.3608704	32.7631874
-116.3608627	32.7672615
-116.3609009	32.7709351
-116.3564072	32.7709274
-116.3466721	32.7708702
-116.3436737	32.7708359
-116.3390884	32.7708054
-116.3270569	32.7707481
-116.3264618	32.7707291
-116.3184509	32.7708015
-116.3171158	32.7707672
-116.3171768	32.7670517
-116.3171997	32.7631454
-116.3172760	32.7569122
-116.3173828	32.7511406
-116.3173828	32.7501564

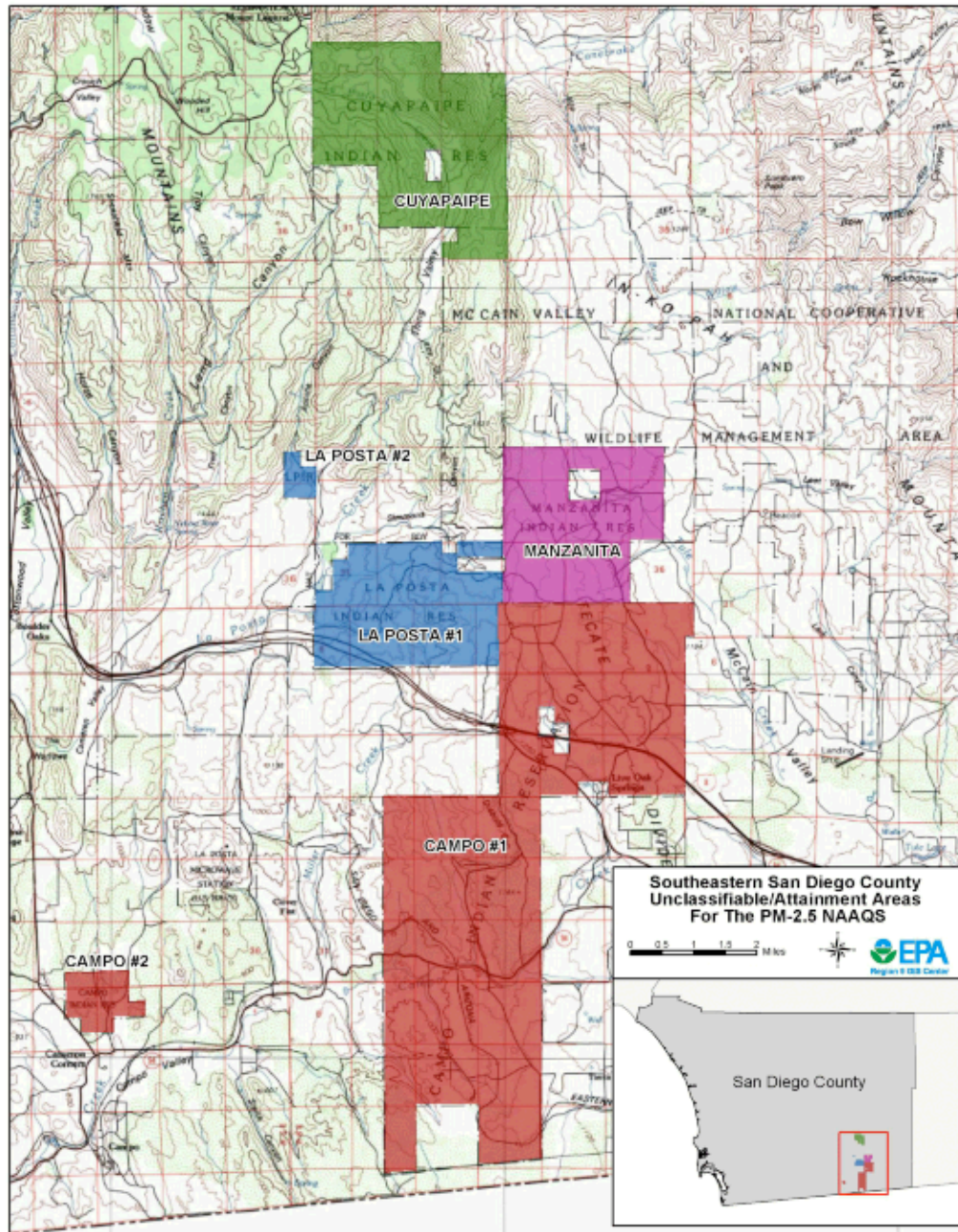
-116.3173828	32.7500610
-116.3174362	32.7489281
-116.3234787	32.7489281
-116.3266678	32.7488899
-116.3266449	32.7416649
-116.3266830	32.7344131
-116.3372269	32.7344055
-116.3438492	32.7343788
-116.3530502	32.7343521
-116.3610229	32.7343369

EXCLUDING:

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.3388977	32.7581825
-116.3431778	32.7581978
-116.3431625	32.7613106
-116.3431625	32.7631645
-116.3431320	32.7654572
-116.3387756	32.7654266
-116.3346558	32.7654114
-116.3346634	32.7644844
-116.3346558	32.7631302
-116.3346634	32.7619247
-116.3346710	32.7581978
-116.3388977	32.758182

APPENDIX C

Map: Southeastern San Diego County Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS



6.9 Region 9 Nonattainment Areas

6.9.1 EPA 9-Factor Analyses for California for the Designation of PM_{2.5} Nonattainment Areas

This attachment to the modification letter to California contains EPA's preliminary evaluation of the state's recommended PM_{2.5} nonattainment areas. The recommended areas have been evaluated to determine if they follow the guidance provided in EPA's memo of April 1, 2003, "Designations for the Fine Particle National Ambient Air Quality Standards" from Jeffrey R. Holmstead, Assistant Administrator of EPA to Region Administrators.

In the April 1, 2003 memo, EPA states that for the purposes of designating PM_{2.5} nonattainment areas, it "presumes the entire MSA should be designated as nonattainment." In areas where there are multiple MSA's comprising one larger CMSA, the entire CMSA is the presumptive nonattainment area. This is based on the assumption that "violations of the PM_{2.5} NAAQS in urban areas may be presumed attributable at least in part to contributions from sources distributed throughout the Metropolitan Area."

The April 1, 2003 memo also states that in some cases, a State or Tribe may find that a violation of the PM_{2.5} standard is attributed to a significant metropolitan-scale component and yet believe that the Metropolitan Area does not appropriately define the area that should be designated nonattainment. EPA will consider requests for urban nonattainment area definitions that deviate from OMB's metropolitan area definitions on a case-by-case basis, considering the factors described below:

- Emissions in areas potentially included versus excluded from the nonattainment area
- Air quality in potentially included versus excluded areas
- Population density and degree of urbanization including commercial development in included versus excluded areas
- Traffic and commuting patterns
- Expected growth (including extent, pattern and rate of growth)
- Meteorology (weather/transport patterns)
- Geography/topography (mountain ranges or other air basin boundaries)
- Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)
- Level of control of emission sources

This attachment provides EPA's preliminary conclusions on California's recommended PM_{2.5} nonattainment areas with respect to EPA's April 1, 2003 guidance and the nine factors that must be considered when designating an area smaller than the Metropolitan Statistical Area.

California has recommended four PM_{2.5} nonattainment areas:

San Diego County
San Joaquin Valley
South Coast Air Basin
City Of Calexico, Imperial County, California

6.9.1.1 City of Calexico, Imperial County, California

There are three PM_{2.5} monitoring sites in Imperial County that are being used to determine this area's compliance with the NAAQS: Calexico - Ethel Street, El Centro, and Brawley. When the State submitted their recommendations for PM_{2.5} nonattainment areas they used data from the years 2000 through 2002. This data set indicated that the monitor at Calexico - Ethel Street was in violation of the annual PM_{2.5} NAAQS, with a 3-year annual average of 15.6 $\mu\text{g}/\text{m}^3$. The 2000-2002 three-year annual averages for El Centro and Brawley were 11.3 $\mu\text{g}/\text{m}^3$ and 14.7 $\mu\text{g}/\text{m}^3$, respectively.

When the 2003 data set became available, EPA recalculated the three-year annual averages for these monitoring locations. The most recent three years of data (2001-2003) indicate that while the three-year annual averages are close to the NAAQS, none of the sites exceed the annual NAAQS of 15 $\mu\text{g}/\text{m}^3$. The 2001-2003 year annual averages for Calexico, El Centro, and Brawley are 14.3 $\mu\text{g}/\text{m}^3$, 11.1 $\mu\text{g}/\text{m}^3$, and 14.5 $\mu\text{g}/\text{m}^3$ respectively.

It should be noted that the three monitoring sites did not have complete data sets for the 2001-2003 timeframe. In order to calculate the annual averages, EPA used the data substitution procedures in "Guideline on Data Handling Conventions for the PM NAAQS" (EPA-454/R-99-008, 1999).

6.9.1.2 San Diego Area

For the San Diego area, California recommended San Diego County as the PM_{2.5} nonattainment area. It includes the entire San Diego MSA.

The presumptive PM_{2.5} nonattainment area for San Diego is the San Diego MSA which includes San Diego County in its entirety.

The state's recommended PM_{2.5} nonattainment area is the same as EPA's presumptive nonattainment area.

Based on EPA's preliminary nine-factor analysis of California's recommendation, the presumptive nonattainment area and all adjacent counties, EPA agrees that California's recommendation is an appropriate nonattainment area. We have included comments on each factor in the pages following.

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The presumptive boundary for the San Diego MSA is all of San Diego County. The State of California's recommended PM_{2.5} nonattainment area includes all of San Diego County, under the jurisdiction of the San Diego Air Pollution Control District. All potential emission sources in the San Diego MSA are included in the State's state recommended nonattainment area.

Adjacent counties to San Diego include Orange, Riverside, and Imperial Counties. Emissions generated in Orange County and Riverside County are included in the state recommended South Coast nonattainment area. Emissions originating in Imperial County do not contribute to elevated PM_{2.5} concentrations in San Diego County because Imperial County is separated from the San Diego area by the Laguna Mountains and many miles of desert.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 2: Air quality in potentially included versus excluded areas

The State's recommended boundary includes all violating monitoring sites. Violating monitors in Orange County and Riverside County are included in the state-recommended South Coast nonattainment area. There are no monitors in Imperial County that are currently in violation of either the 24-hour or annual PM_{2.5} NAAQS.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

All urbanized areas in the San Diego MSA are included in the state's recommended boundary and exist west of the Laguna Mountains, which bisect San Diego County from the north to the south. Urbanized areas in the adjacent counties of Orange and Riverside fall within the South Coast nonattainment area. The nearest urbanized area in Imperial County is the El Centro area which is separated from the San Diego area by the Laguna Mountains and many miles of desert. The El Centro area is currently not violating either the 24-hour or annual PM_{2.5} NAAQS.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 4: Traffic and commuting patterns

California's recommended PM_{2.5} nonattainment area, San Diego County, contains most of the VMT for the San Diego MSA. The amount of commuting traffic between San Diego and Orange or Riverside Counties is minimal and would not contribute significantly to air quality problems in San Diego County.

Because of the great distance between San Diego's urbanized areas and Imperial County, traffic and commuting patterns in Imperial County do not contribute to air quality violations in San Diego County.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 5: Expected growth (including extent, pattern and rate of growth)

Expected growth in the San Diego MSA will be contained in San Diego County. Expected growth in the adjacent counties of Orange and Riverside will be accounted for in the state-recommended South Coast nonattainment area. Growth in urban areas of Imperial County will not impact the San Diego MSA due to the great distance between these areas.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 6: Meteorology (weather/transport patterns)

The distribution of high PM_{2.5} concentrations within the San Diego area appear to be dependent upon calm-to-light winds and not as dependent upon wind direction. This suggests, as in the South Coast area, that there is enough activity within the San Diego area to generate high PM_{2.5} concentrations under many conditions and that high concentrations are not being caused by adjacent areas such as Orange, Riverside and Imperial Counties.

Because high PM_{2.5} concentrations occur during periods of calm-to-light wind conditions, the source of the high PM_{2.5} concentrations is likely within San Diego County itself. Under these conditions, it is unlikely that transport is bringing precursors into the County in levels significant enough to cause violations there.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The San Diego MSA is bounded by the Laguna Mountains to the east, which bisect San Diego County into a western portion, where the San Diego MSA is located, and an eastern portion which is rural and adjacent to Imperial County. To the west is the Pacific Ocean. Orange and Riverside counties are to the north and the U.S.-Mexico border forms the southern boundary.

Emissions originating in Imperial County do not contribute to elevated PM_{2.5} concentrations in San Diego County because Imperial County is separated from the San Diego area by the Laguna Mountains and miles of desert. While there could be some transport of emissions from Orange or Riverside counties, these areas are included in the state-recommended South Coast nonattainment area. Any emissions emanating from across the U.S.-Mexico border will need to be dealt with through the planning process.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The state recommended San Diego County nonattainment area is entirely under the jurisdiction of the San Diego Air Pollution Control District. To the north of San Diego County is Orange and Riverside Counties, which are included in the state-recommended South Coast nonattainment area. Imperial County to the east is under the jurisdiction of the Imperial County Air Pollution Control District. Imperial County contributes minimally if at all to PM_{2.5} air quality in San Diego County because of the distance between the San Diego urban area and Imperial County and the Laguna Mountain range which effectively separates the San Diego urban area from Imperial County.

EPA concludes that analysis of this factor supports designating San Diego County as the nonattainment area for the San Diego Metropolitan Area.

Factor 9: Level of control of emissions sources

Imperial County does not contribute to violations in San Diego County because of the low level of emissions in the western half of Imperial County, the intervening mountains (extending to over 4000 ft. in height), and the prevailing westerly winds. There is no significant commute pattern linking the two areas, since the urbanized portions of San Diego and Imperial County are separated by more than 100 miles of relatively sparsely populated mountains and desert (the highway distance from San Diego to El Centro is 117 miles). The two counties are under separate air quality jurisdictions (San Diego County Air Pollution Control District and Imperial County Air Pollution Control District) and in separate State air basin planning areas (San Diego Air Basin and Salton Sea Air Basin). While the coastal portion of San Diego County is highly urbanized with a population of approximately 3,000,000, the entire Imperial County is rural and primarily agricultural, with a total County population of approximately 150,000 (population density of 35 per square mile). San Diego's average daily VMT is over 75,000,000, compared to Imperial County's average daily VMT of approximately 4,215,000.

6.9.1.3 San Joaquin Valley Area

For the San Joaquin Valley, California recommended the San Joaquin Valley (SJV) as the PM_{2.5} nonattainment area.

This area includes the SJV Air Basin portion of Kern County, and all of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties.

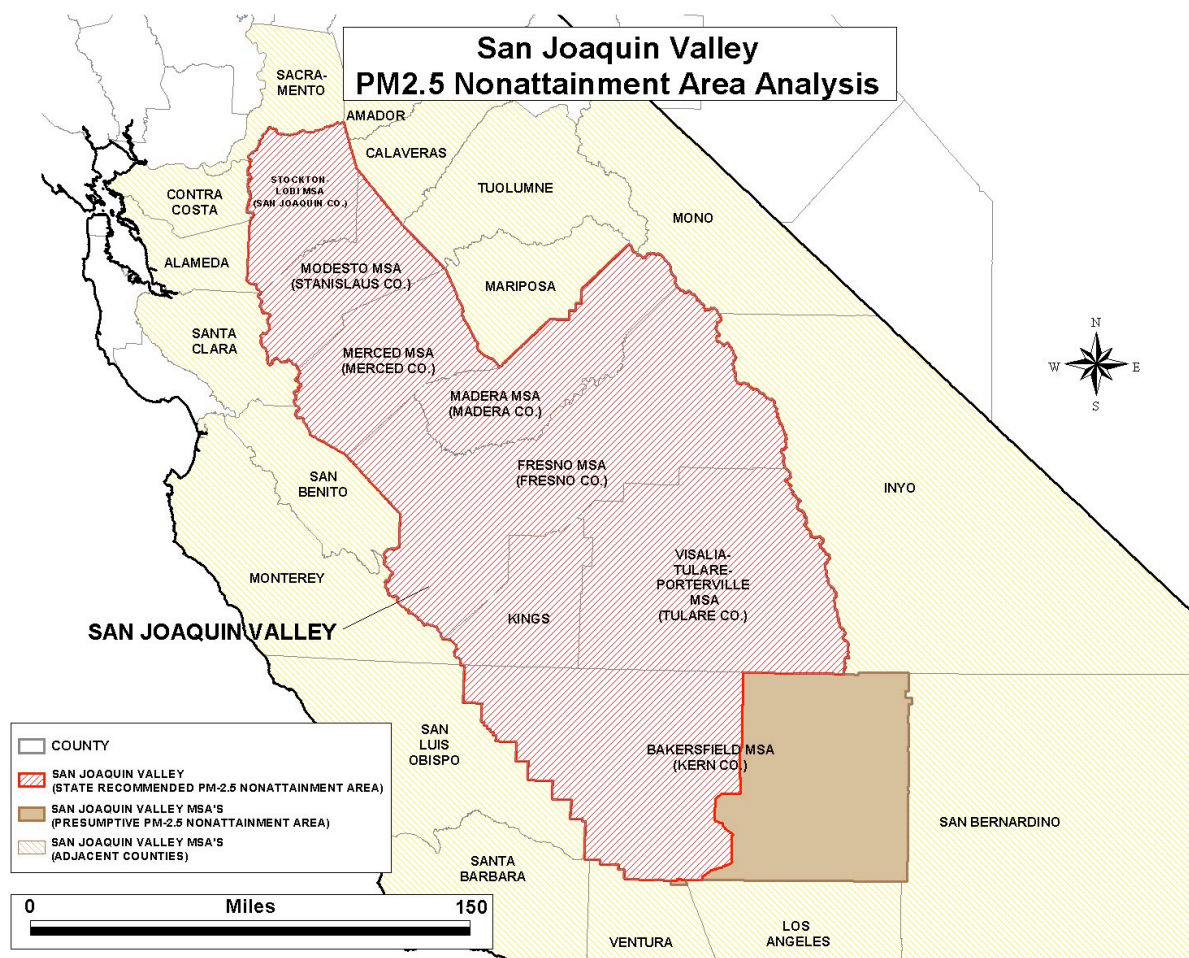
The presumptive nonattainment area includes the MSA's that have violations of the PM_{2.5} NAAQS. These include the following MSA's: Bakersfield (Kern County), Fresno (Fresno County), Merced (Merced County), Modesto (Stanislaus County), and Visalia-Tulare-Porterville (Tulare County).

The only portion of the presumptive nonattainment area excluded from the state's SJV recommendation is Eastern Kern County (EKC), which is in a separate air basin (Mojave Desert)

and is separated from the SJV by the Sierra Nevada and Tehachapi Mountains and significant distance.

The seventeen counties adjacent to the presumptive area and excluded from the state's recommendation (Alameda, Amador, Calaveras, Contra Costa, Inyo, Los Angeles, Mariposa, Mono, Monterey, Sacramento, San Benito, San Bernardino, San Luis Obispo, Santa Barbara, Santa Clara, Tuolumne, Ventura) are not in the SJV. These areas are either mountainous, separated from SJV by mountains, separated from SJV by significant distance or a combination of all of three. Thus, this indicates that these counties should not be included in the San Joaquin Valley nonattainment area.

Based on the following nine-factor analysis, EPA concurs with the State's recommendation to include San Joaquin and Kings counties and to exclude that portion of Kern County east of the Tehachapi and Sierra Nevada Mountains. The excluded portion of Kern County is a rural, desert area in a separate State air basin (Mojave Desert) from the San Joaquin Valley (SJV). We have included comments on each factor in the pages following.



Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The EKC emissions are a tiny fraction of SJV emissions, as shown in the table below.

Comparison of PM2.5 and PM2.5 Precursor Emissions Eastern Kern County vs. San Joaquin Valley Source: California Air Resources Board, 2004 California Almanac of Emissions & Air Quality, 2003 Estimated Annual Average Emissions in Tons per Day				
	VOC	NO_x	SO₂	PM2.5
Eastern Kern County	13.2	37.9	3.9	9.5
San Joaquin Valley	396.7	504.9	26.6	150.5

California's recommended PM2.5 nonattainment area only excludes the EKC which contributes only a tiny fraction of the emissions in the presumptive nonattainment area. This excluded area is separated from the SJV by the Tehachapi and Sierra Nevada mountains. Thus, the excluded area does not cause violations of the NAAQS in the SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the San Joaquin Valley nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM2.5.

Factor 2: Air Quality in potentially included versus excluded areas

California's recommended PM2.5 nonattainment area, the SJV, contains all violating monitors. Thus, violations are not occurring in the excluded portions of the metropolitan statistical area.

With respect to adjacent counties, the only monitors that violate the NAAQS in an adjacent county are in counties that have been recommended as part of the Los Angeles nonattainment area and are separated from the SJV by mountains.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM2.5.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The population of the EKC is approximately 120,000, compared to the SJV population of approximately 3,500,000. EKC has a very low population density (47 per square mile), degree of urbanization, and projected population growth, since the major source of EKC employment is the military.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the San Joaquin Valley by topography and/or distance. Based on their location

and this factor, these counties should not be included in the San Joaquin Valley nonattainment area.

EPA concludes that analysis of this factor supports designating the San Joaquin Valley as the nonattainment area for PM_{2.5}.

Factor 4: Traffic and commuting patterns

Average daily VMT for EKC is approximately 4,200,000 compared to SJV VMT of approximately 85,000,000. There is an insignificant volume of daily commute traffic between EKC and SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 5: Expected growth (including extent, pattern and rate of growth)

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 6: Meteorology (weather/transport patterns)

There are typically westerly winds in the southern SJV, which have the potential to carry some levels of PM_{2.5} precursors from SJV to EKC, although the mountains (elevations from 4,064 ft. at the Tehachapi Pass in the south to 9,875 ft. at Sunday Peak in the north) serve as a barrier to transport. Attainment of the PM_{2.5} and 8-hour ozone NAAQS within SJV will require adoption of Statewide and SJV controls at a level of stringency sufficient to ensure that transport from SJV to EKC will be further minimized. Transport from EKC to SJV is insignificant, because of the high mountains, the prevailing wind direction, and the insignificant level of emissions in EKC.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

California's recommended PM_{2.5} nonattainment area, the SJV, is bounded on the west by the Coast Ranges, on the south by the Tehachapi mountains, and on the east by the Sierra Nevada mountains. These mountains act as a barrier to pollution. Violations of the PM_{2.5} NAAQS are not caused by areas outside the SJV.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The EKC is excluded from the SJV nonattainment area because it is under the jurisdiction of the Kern County Air Pollution Control District, and in a separate air basin, The Mojave Desert Air Basin. SJV nonattainment areas are in the same separate air basin and are all under the jurisdiction of the SJV Unified Air Pollution Control District. The California Air Resources Board coordinates Statewide planning, oversees implementation of intra-state planning requirements (including transport mitigation), and coordinates inter-basin planning, to the extent necessary.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

Factor 9: Level of control of emissions sources

Both EKC and SJV are designated nonattainment for the 8-hour ozone NAAQS (with the exception of the extreme northeastern corner of EKC, which is designated attainment). Control measures developed to attain the 8-hour ozone NAAQS in both the EKC and SJV will likely focus on coordinated State initiatives to reduce precursor emissions from mobile sources. The State also is aggressively pursuing Statewide controls on primary PM emitted by mobile sources as part of a diesel risk reduction initiative.

Counties adjacent to the presumptive area and excluded from the state's recommendation are separated from the SJV by topography and/or distance. Based on their location and this factor, these counties should not be included in the SJV nonattainment area.

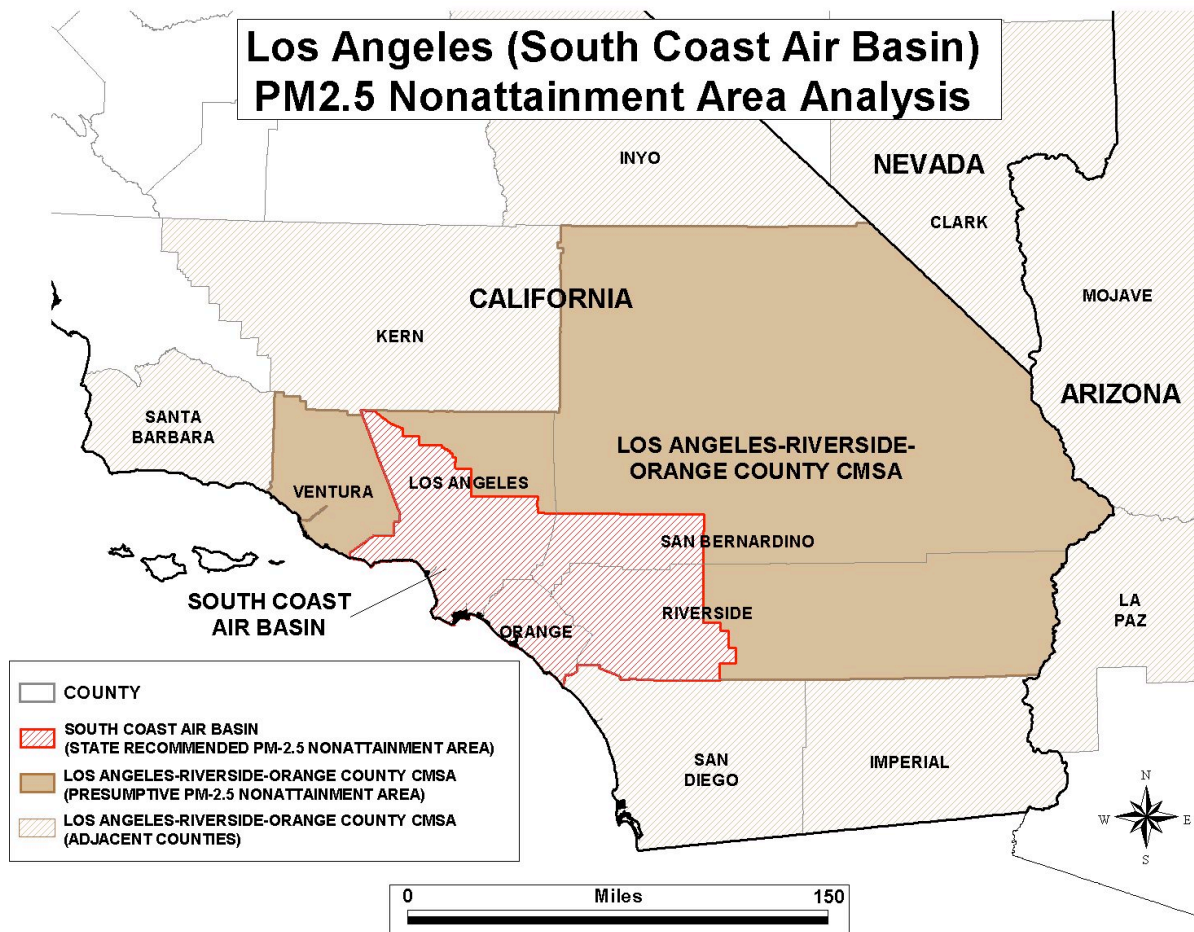
EPA concludes that analysis of this factor supports designating the SJV as the nonattainment area for PM_{2.5}.

6.9.1.4 South Coast Air Basin Area

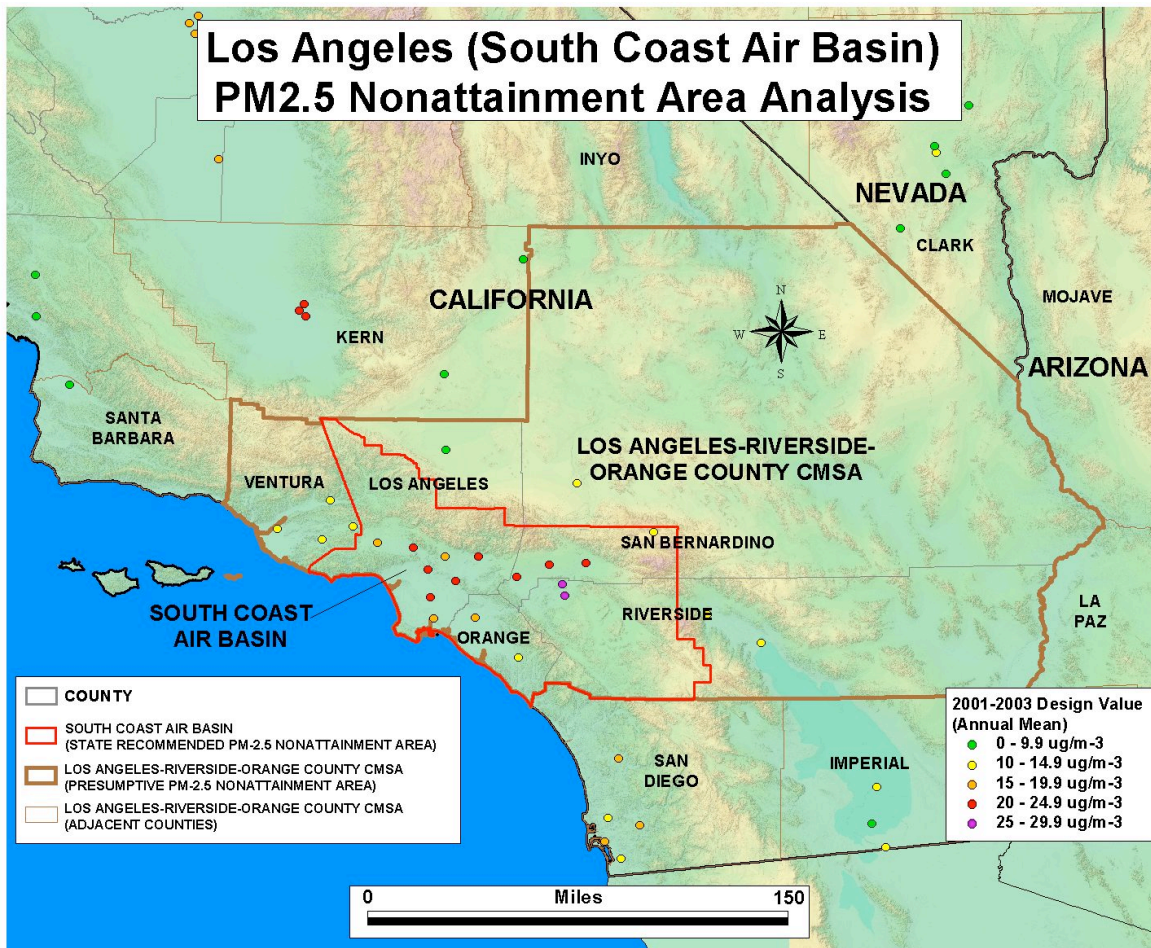
For the Los Angeles nonattainment area, California recommended the South Coast Air Basin as the PM_{2.5} nonattainment area. This area includes the South Coast Air Basin portions of Los Angeles, Orange, Riverside and San Bernardino counties.

The presumptive nonattainment area is the Los Angeles CMSA, which includes the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura.

Based on EPA's preliminary nine-factor analysis of California's recommendation, the presumptive nonattainment area and all adjacent counties, EPA agrees that California's recommendation is an appropriate nonattainment area for the Los Angeles area (note: The "Los Angeles" area consists of the urban areas of the city of Los Angeles and surrounding developed areas within the Los Angeles basin). We have included comments on each factor in the pages following.







Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

ST	COU	Total Emissions, 2001 (tons)									Weighted Emissions	
		PM	SO2	NOX	VOC	Amm	Carbon	Crustal	SO2 - Ex Pt	NOx - Ex Pt	L-Score	Cumulative L-Score
	C/MSA Total	69,872	22,119	530,780	465,495	61,094	41,151	23,840	10,900	476,347		
CA	Los Angeles	28,855	16,629	276,002	251,469	14,252	19,365	7,097	7,460	254,668	53.4	53.4
CA	San Bernardino	17,741	3,246	109,488	50,273	21,541	8,147	8,022	1,602	81,597	19.7	73.1
CA	Orange	8,585	1,129	73,846	89,987	7,330	5,714	2,466	974	71,374	12.7	85.8
CA	Riverside	10,476	674	52,809	46,232	16,164	5,280	4,921	575	51,315	10.0	95.8
CA	Ventura	4,215	441	18,635	27,529	1,807	2,645	1,334	289	17,393	4.2	100.0
NV	Clark	13,408	48,089	76,295	50,366	2,362	3,897	8,880	4,583	45,594	40.5	
CA	Kern	13,712	5,468	71,174	41,469	11,496	7,469	5,296	1,651	54,604	16.5	
CA	San Diego	12,683	2,007	76,341	95,353	6,015	7,297	4,827	1,748	73,046	14.8	
CA	Santa Barbara	4,201	1,301	14,919	24,755	2,032	2,764	1,292	280	13,355	4.5	
CA	Imperial	4,931	264	16,683	11,254	8,473	2,151	2,523	195	15,887	3.6	
AZ	Mohave	3,037	695	12,691	12,837	1,231	2,021	959	688	11,935	3.3	
CA	Inyo	2,764	394	1,694	3,247	747	2,133	564	173	1,424	2.0	
AZ	La Paz	810	142	3,100	2,407	503	319	483	142	3,062	0.7	
	Area Total	125,418	80,479	803,677	707,188	93,953	69,202	48,664	20,360	695,254		

2003 Estimated Non-Natural Emissions (tons per day)								
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)				non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)			
	Emissions (included area)				Emissions (excluded area)			
	ROG*	NOX	SOX	PM2.5	ROG*	NOX	SOX	PM2.5
Los Angeles	480.80	630.10	52.00	55.90	20.90	26.90	0.60	8.90
(As a percentage)	48.8%	48.0%	71.5%	34.7%	2.1%	2.0%	0.8%	5.5%
Orange	159.40	174.10	6.90	17.80				
(As a percentage)	16.2%	13.3%	9.5%	11.0%				
Riverside	79.00	125.00	1.90	16.00	17.20	29.90	0.40	7.40
(As a percentage)	8.0%	9.5%	2.6%	9.9%	1.7%	2.3%	0.6%	4.6%
San Bernardino	85.00	115.50	2.20	16.00	87.30	160.90	7.40	28.40
(As a percentage)	8.6%	8.8%	3.0%	9.9%	8.9%	12.3%	10.2%	17.6%
Ventura (land area)					54.71	50.75	1.31	10.80
(As a percentage)					5.6%	3.9%	1.8%	6.7%
Total	804.20	1044.70	63.00	105.70	180.11	268.45	9.71	55.50
(As a percentage)	81.7%	79.6%	86.6%	65.6%	18.3%	20.4%	13.4%	34.4%
*(excluding non-anthropogenic, aka "natural" emissions) ROG is defined as "Reactive Organic Gas"								

Factor 1 (continued): Emissions in areas potentially included versus excluded from the nonattainment area

In the review of this factor, data from EPA's Emission Inventory and California Air Resources Board (CARB) has been used. This data is displayed in Figures 1.1 and 1.2. The CARB data was useful because it allowed calculation of included and excluded areas' emission inventories. Also, EPA produced a weighted emission index, referred to as an "L-score" for each county, which is another method of examining emission levels in various counties.

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains most of the anthropogenic emissions in the Los Angeles CMSA. The only excluded areas with significant emissions are population centers (Palm Springs, Lancaster-Palmdale and Victorville-Apple Valley-Hesperia) significantly north or east of Los Angeles. These areas are separated from the Los Angeles area by the San Gabriel, San Bernardino and San Jacinto mountain ranges,

which contain the Los Angeles PM2.5 problem to the Los Angeles area. It is not a problem in the excluded areas and prevailing winds in the excluded areas are generally away from the Los Angeles area. Thus, emissions in the excluded areas are not causing or contributing to violations in the Los Angeles area.

The other excluded area is Ventura County, which produces a small portion of the emissions in the Los Angeles CMSA. Most of the development and population in Ventura County is located away from the Los Angeles area and much of the county is separated from the Los Angeles area by mountains.

Six counties adjacent to the Los Angeles CMSA (Clark, NV; Imperial, CA; Inyo, CA; La Paz, AZ; Mohave, AZ; and Santa Barbara, CA) are separated from the Los Angeles area by great distance, mountain ranges, desert or a combination of all three. Thus, this indicates that these counties should not be included in the Los Angeles nonattainment area.

Two counties adjacent to the Los Angeles CMSA are in separate nonattainment areas (e.g., Kern, San Diego) and are separated from the Los Angeles area by mountain ranges. Thus, they are not included in the Los Angeles nonattainment area for those reasons.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 2: Air Quality in potentially included versus excluded areas

ST	COU	Design Values					
		'01-'03		'00-'02		'99-'01	
	C/MSA Total	27.4	NA	28.9	NA	29.8	NA
CA	Los Angeles	22.8	NA	24.4	NA	25.9	NA
CA	San Bernardino	24.5	NA	25.9	NA	25.8	NA
CA	Orange	18.6	NA	20.3	NA	22.4	NA
CA	Riverside	27.4	NA	28.9	NA	29.8	NA
CA	Ventura	14.5	A	14.8	A	14.5	A
NV	Clark	11.0	A	10.9	A	11.0	A
CA	Kern	21.8	NA	22.8	NA	23.7	NA
CA	San Diego	15.9	NA	16.4	NA	17.1	NA
CA	Santa Barbara	9.5	A	9.9	A	13.0	a
CA	Imperial	9.1	A	15.6	NA	15.7	NA
AZ	Mohave						
CA	Inyo	6.2	A	7.8	a	7.6	a
AZ	La Paz						
	Area Total	27.4	NA	28.9	NA	29.8	NA

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains all violating monitors of the Los Angeles CMSA. Thus, violations are not occurring in the excluded

portions of the metropolitan area. With respect to adjacent counties, the only monitor that violates in an adjacent county is in Kern County which will be part of the SJV nonattainment area. This area is separated from the Los Angeles area by two mountain ranges.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

Population and Population Density				
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)		non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)	
	Population (included area)	Population Density (included area)	Population (excluded area)	Population Density (excluded area)
Los Angeles	*9,222,000	*3,693	*298,000	*190
Orange	2,846,289	3,607	---	---
Riverside	*1,199,000	*544	*347,000	*68
San Bernardino	*1,330,000	*1,057	*379,000	*20
Ventura	---	---	753,197	425
Total	*14,596,289	*2,164	*1,777,000	*65
Source: U.S. Census, 2000				
*figure based on estimate of partial county population and/or population density				

California's recommended nonattainment area has a population density of 2164 persons per square mile. The excluded portion of the Los Angeles C/MSA has a population density of 65 persons per square mile. The recommended nonattainment area contains the densely populated portions of the Los Angeles C/MSA. It also contains 89% of the C/MSA's population. Furthermore, the excluded areas consist of areas separated from the included areas by topography and/or sparsely populated deserts.

Counties adjacent to the C/MSA are separated from the Los Angeles area by deserts and great distance and are not included in the nonattainment area for that reason.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 4: Traffic and commuting patterns

Vehicle Miles Traveled				
County	South Coast Air Basin portion of Los Angeles CMSA (area included in nonattainment area)		Non-South Coast Air Basin portion of Los Angeles CMSA (area excluded from nonattainment area)	
	Average Daily Vehicle Miles Traveled (included area)	VMT as a percentage of LA CMSA (included area)	Average Daily Vehicle Miles Traveled (excluded area)	VMT as a percentage of LA CMSA (excluded area)
Los Angeles	179,875,902	47.5	3,935,115	1.0
Orange	67,855,304	17.9	---	---
Riverside	37,266,851	9.8	18,478,676	4.9
San Bernardino	35,448,320	9.4	17,872,337	4.7
Ventura	---	---	18,215,281	4.8
Total	320,446,377	84.6	58,501,409	15.4

Appendix C: Surface Area, Population, and Average Daily Vehicle Miles Traveled.

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, contains most (84.6%) of the Vehicle Miles Traveled (VMT) for the Los Angeles C/MSA.

Other portions of the Los Angeles C/MSA outside the South Coast Air Basin account for 15.4% of the VMT for the Los Angeles CMSA. The areas outside the South Coast Air Basin in Los Angeles, Riverside and San Bernardino counties account for 10.6% of the VMT in the Los Angeles CMSA, however, these areas are, for the most part, only sparsely populated desert areas separated from the Los Angeles area by the San Gabriel, San Bernardino, and San Jacinto Mountains. The area outside the South Coast Air Basin in Ventura County accounts for 4.8% of the VMT in the Los Angeles CMSA. Most of the population in Ventura County is in the Ventura-Oxnard area. We believe that the distribution of VMT in Ventura County is similar to population, and thus that most of the VMT in Ventura County is in the Ventura-Oxnard area. This area is approximately 35 miles from the nearest violating monitor in the Los Angeles area and is separated from the Los Angeles area by the Santa Monica Mountains and Simi Hills and thus does not contribute to violations in the Los Angeles area. The Ventura County community closest to Los Angeles county is Simi Valley; however, its population is only 15% of the entire county and is separated from the Los Angeles area by the Santa Susana mountains, Simi Hills and other topography in the area. We believe that a similarly small proportion of Ventura County VMT is in Simi Valley. Based on VMT data for Ventura County, we believe that this factor does not show that Ventura areas are causing violations in the Los Angeles area.

There are several counties adjacent to the Los Angeles CMSA (Clark, NV; Imperial, CA; Inyo, CA; Kern, CA; La Paz, AZ; Mohave, AZ; Santa Barbara, CA; San Diego, CA). None of these counties will be included in the Los Angeles nonattainment area based on this factor because

these areas are too distant from the Los Angeles area, there is little, if any, commuting to the Los Angeles area from these counties, and they are separated by geography from the Los Angeles area. With respect to this factor, these areas do not cause or contribute to violations in the Los Angeles area.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 5: Expected growth (including extent, pattern and rate of growth)

ST	COU	Population & Area					Additional Population Info			
		2002	Area (sq miles)	Density '02	Growth '90-'00	Pct chng '9-'00	1990	2000	Growth '02-'10	Pct chng '02-'10
	C/MSA Total	17,044,188	33,966	502	1,842,116	13	14,531,529	16,373,645	1,842,116	13
CA	Los Angeles	9,806,577	4,060	2,415	656,174	7	8,863,164	9,519,338	656,174	8
CA	San Bernardino	1,816,072	20,062	91	291,054	21	1,418,380	1,709,434	291,054	20
CA	Orange	2,938,507	790	3,720	435,733	18	2,410,556	2,846,289	435,733	18
CA	Riverside	1,699,112	7,208	236	374,974	32	1,170,413	1,545,387	374,974	32
CA	Ventura	783,920	1,846	425	84,181	13	669,016	753,197	84,181	13
NV	Clark	1,522,164	7,911	192	634,306	86	741,459	1,375,765	634,306	86
CA	Kern	694,059	8,142	85	118,168	22	543,477	661,645	118,168	22
CA	San Diego	2,906,660	4,205	691	315,817	13	2,498,016	2,813,833	315,817	13
CA	Santa Barbara	403,084	2,739	147	29,739	8	369,608	399,347	29,739	8
CA	Imperial	146,248	4,175	35	33,053	30	109,303	142,361	33,053	30
AZ	Mohave	165,593	13,312	12	61,535	66	93,497	155,032	61,535	66
CA	Inyo	18,214	10,192	2	-336	-2	18,281	17,945	-336	-2
AZ	La Paz	19,517	4,500	4	5,871	42	13,844	19,715	5,871	42
	Area Total	22,919,727	89,142	257	3,040,274	16	18,919,014	22,919,727	4,000,713	21

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, contains most of the expected growth for the Los Angeles C/MSA. The areas in the Los Angeles C/MSA experiencing the greatest population growth during the 1990's were Riverside and San Bernardino counties with growth rates of 21% and 32% respectively. This high rate of growth is expected to continue in these counties. The recommended nonattainment area contains the portions of these counties on the edge and beyond the Los Angeles suburbs, so likely growth and expansion of the populated areas will occur within the recommended nonattainment area.

Ventura County is outside the recommended area, but inside the Los Angeles C/MSA. Ventura's growth rate is projected to be 9% through 2010 compared to the slowest growth areas, Los Angeles and Orange counties where growth rates of 8% are projected. Furthermore, Simi Valley, the area of Ventura in closest proximity to Los Angeles, has experienced a slowing of growth and appears to be largely built out. Thus, we do not expect high rates of growth in this area either.

Some counties adjacent to the C/MSA have high rates of growth and/or are projected to; however, these counties are separated from the Los Angeles area and its suburbs by some or all of the following: great distances, mountain ranges, deserts and sparsely populated areas and thus do not contribute or cause violations in the Los Angeles area.

Based on analysis of this factor, the recommended area includes the Los Angeles area and nearby areas of expected growth, so the recommended area is appropriate. EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 6: Meteorology (weather/transport patterns)

California's recommended PM2.5 nonattainment area, the South Coast Air Basin, experiences high PM2.5 concentrations throughout the area and these concentrations may occur any time of year. Generally, the highest concentrations occur when winds are light and the atmosphere is stable.

Based on an analysis of wind strength and direction associated with PM2.5 concentrations, high concentrations are found throughout the South Coast Air Basin, and they tend to occur when winds are light, especially when the average wind speed is below 4 mph. At most monitors, high PM2.5 concentrations can occur regardless of the wind direction; in fact, most monitors have a bi-modal distribution of high PM2.5 concentrations with respect to wind direction. Most of these monitors have the same bi-modal distribution of average winds as well, generally from the west to northwest and also from the southeast. It appears that calm to light winds are a more important factor than the direction from which those winds originate.

The abundance of sources in the South Coast Air Basin and widespread distribution of high PM2.5 concentrations, dependent upon calm-to-light winds and not as dependent upon wind direction suggests that there is enough activity within the basin to generate high PM2.5 concentrations under many conditions and that high concentrations are not being caused by adjacent areas.

Because mountains nearly surround the South Coast Air Basin, and high PM_{2.5} concentrations occur during periods of calm-to-light wind conditions, the source of the high PM_{2.5} concentrations is likely within South Coast Air Basin itself. Under these conditions, it is unlikely that transport is bringing precursors into the basin in levels significant enough to cause violations there.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, is bounded on the southwest by the Pacific Ocean, on the west by the Santa Monica, Santa Susana Mountains and Simi Hills, on the north by the San Gabriel Mountains, on the northeast by the San Bernardino, on the east by the San Jacinto Mountains and on the south by the Santa Ana and coast range mountains. These hills and mountain ranges have elevations of 2,000 to well over 10,000 feet and act as barriers to pollution. Thus, violations in the Los Angeles area are not caused or contributed to by areas outside the South Coast Air Basin.

The excluded areas of the Los Angeles CMSA are separated from the Los Angeles area by the aforementioned mountains and also great distances, and/or deserts.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

The five counties of the Los Angeles CMSA comprise 33,954 square miles. This area is equivalent to a square that is 184 miles long and 184 miles wide. The Los Angeles metropolitan and urbanized areas, although large, are only a small fraction of the entire Los Angeles CMSA, however, since Los Angeles' development occupies small portions of the area's very large counties, especially Riverside, San Bernardino and Ventura counties, and because CMSA's are comprised of units no smaller than counties (except in New England), this CMSA is much larger than the Los Angeles area. Although this is the presumptive nonattainment area, it is much larger than the Los Angeles area. Furthermore, it is much larger than the area with PM_{2.5} NAAQS violations and its accompanying source areas.

The CMSA encompasses fully five different counties, four different local air districts, coastal regions, alpine mountain regions as well as both low and high deserts.

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, is under the jurisdiction of the South Coast Air Quality Management District and includes Los Angeles and its adjacent urban areas, including those in other counties.

The other air districts within the Los Angeles C/MSA are separate agencies that due to geography and distance from Los Angeles, are not included in the Los Angeles nonattainment area.

To the west of the South Coast Air Basin is the Ventura County Air Pollution Control District, which has been a separate air quality planning entity, with its own board of elected officials and distinct responsibilities for all air quality planning, regulatory development, enforcement, and public participation activities, with the exception of those programs that are conducted under the jurisdiction of a State agency (mobile source standards, consumer products, pesticides, motor vehicle inspection and maintenance, etc.). Because of the long history of effective statewide planning and independent agency planning and because of differences in structure and approach between the air pollution control boards of the Ventura and South Coast, it is likely that compelling the two areas to share jurisdictional responsibility for air quality planning in an expanded nonattainment area would interfere with, rather than promote, harmonious and efficient air quality planning. Ventura County, although given an attainment designation for PM_{2.5}, would nonetheless continue its efforts to reduce direct and indirect emissions, as explained further in the analysis of Factor 9.

To the northeast of South Coast Air Basin are the Antelope Valley Air Pollution Control District and the Mojave Desert Air Quality Management District. These areas, although part of the Los Angeles CMSA, are separated from the Los Angeles area by the San Gabriel and San Bernardino mountain ranges, which have elevations over 10,000 feet. For that reason, these areas should not be included in the Los Angeles nonattainment area.

Moreover, the South Coast AQMD has a long history of analyzing and addressing existing and potential transport problems affecting downwind jurisdictions. Finally, coordinated rule development and transport mitigation occurs throughout California because of various provisions of the California Clean Air Act and subsequent legislation, along with the activities of the California Air Pollution Control Officers Association.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

Factor 9: Level of control of emissions sources

California's recommended PM_{2.5} nonattainment area, the South Coast Air Basin, has an extreme designation for the 1-hour ozone standard. It has also been designated 'severe-17' for the 8-hour ozone standard. The area has some of the most stringent controls in the nation.

This factor is not relevant for other Los Angeles C/MSA areas in the Mojave Desert because they are separated from the Los Angeles area by mountains.

Ventura County is also in large part, separate from the Los Angeles area by topography and distance, with just one community near Los Angeles County (although this area, Simi Valley, is also separated from Los Angeles by a mountain pass). Nevertheless, the level of control of emissions sources in Ventura County is already high and expected to become more stringent,

even without a nonattainment designation in Ventura County. The nature of this control is summarized below:

- (1) Ventura County APCD and South Coast AQMD already have a very high level of control of PM precursor emissions, and the agencies are undertaking further progressive control strategy development activities to achieve further control as needed to attain and maintain the NAAQS.
- (2) Although it is not proposed to be designated nonattainment for the federal PM_{2.5} NAAQS, Ventura is designated nonattainment for the extremely stringent California PM₁₀ NAAQS and must therefore pursue feasible controls to reduce PM concentrations.
- (3) The County is also classified as a moderate nonattainment area for the Federal 8-hour ozone NAAQS. Since the two principal ozone precursors are also PM precursors in Ventura, the Ventura County APCD must continue to pursue stringent controls of NO_x and VOC in order to attain the 8-hour ozone NAAQS and these controls will benefit PM concentrations.
- (4) A large part of the PM precursors are under the State's jurisdiction, and the involved State agencies are planning to adopt additional stringent emission controls on a Statewide basis.
- (5) Attaining the PM_{2.5} NAAQS is expected to require the South Coast AQMD and the State to adopt a level of emissions control far in excess of what would be needed to ensure continued maintenance in Ventura County.

Thus, designating Ventura County as part of the South Coast PM_{2.5} nonattainment area is not likely to affect the level of emissions control applicable in the area or upwind in the South Coast.

EPA concludes that analysis of this factor supports designating the South Coast Air Basin as the nonattainment area for the Los Angeles Metropolitan Area.

6.9.2 Justifications for Changes to EPA Recommendations Contained in the June 29, 2004 Letters to States

TECHNICAL SUPPORT DOCUMENT

U.S. EPA Region 9

**Unclassifiable/Attainment Designation
for
Certain Areas in Southeastern San Diego County
for
The PM_{2.5} NAAQS**

Includes the Tribal Areas of The:

**Campo Band of Kumeyaay Indians
Cuyapaipe Band of Kumeyaay Indians
La Posta Band of Mission Indians
and
Manzanita Tribal Lands**

Southeastern San Diego County Unclassifiable/Attainment Areas for the PM2.5 NAAQS: Southeastern San Diego County Indian Reservations

[Note: The non-tribal areas in the vicinity of the designated unclassifiable/attainment areas are under California's jurisdiction and are part of a county-based area that we are designating as nonattainment. The State of California recommended designating all of San Diego County as a single PM2.5 nonattainment area. This recommendation is consistent with presumptions that follow our guidance on designating PM2.5 nonattainment areas. EPA agrees with the State of California's recommendation.]

This section applies to the portion of San Diego County listed below¹:

La Posta Areas #1 and #2
Cuyapaipe Area
Manzanita Area
Campo Areas #1 and #2

The four tribes that occupy these six areas did not submit recommendations to EPA.

These areas, which approximate the boundaries of the reservations of the four Tribes in southeastern San Diego County, are designated unclassifiable/attainment. Based on their location and other factors, we have determined that these areas do not violate the PM2.5 National Ambient Air Quality Standards (NAAQS). We also believe that these areas do not contribute to PM2.5 in other areas.

Although the areas are surrounded by a countywide nonattainment area, the United States has a unique legal relationship with tribal governments which derives from the United States Constitution, treaties, statutes, Executive Orders and court decisions, and is commonly referred to as the Federal government's trust relationship with Tribes. Guidelines for EPA's role in this relationship are outlined in the EPA Policy for the Administration of Environmental Programs on Indian Reservations ("1984 Indian Policy") which was issued in 1984 and has been reaffirmed by successor administrations.

The 1984 Indian Policy states that in the course of protecting human health and the environment, EPA should recognize tribal governments as sovereign entities with primary authority and responsibility for their members, and in keeping with this principle of tribal self-government, view tribal governments as the appropriate non-federal parties for making decisions and carrying out program responsibilities affecting their reservations and their members. Where tribes have not assumed delegable programs, EPA retains responsibility for managing federal programs on reservations. Correspondingly, as a matter of federal case law, absent an express delegation of authority by Congress to a State, States lack civil regulatory jurisdiction over tribes. Respect for, and protection of, this division of jurisdiction is an integral part of the federal trust responsibility.

¹ See "Southeastern San Diego County Unclassifiable/Attainment Areas For The PM2.5 NAAQS" and "Southeastern San Diego County Unclassifiable/Attainment Area Descriptions" in this document for further description of these areas.

Based on EPA's own evaluation of the nine factors for these four tribes in southeastern San Diego County, EPA believes that a designation of unclassifiable/attainment is appropriate and is consistent with the definition of nonattainment in §107(d)(1) of the Clean Air Act.

The justification for this designation is that these tribal areas are small in area, population and commercial development, and are located approximately 40 miles from San Diego and are separated from San Diego by mountain ranges, deserts and uninhabited land. Based on the nine-factor analysis presented below, EPA has concluded that activities within these tribal lands do not cause or contribute to PM_{2.5} in San Diego County, and thus are appropriately excluded from the surrounding San Diego County PM_{2.5} nonattainment area and designated as individual unclassifiable/attainment areas for the PM_{2.5} NAAQS. We also note that our decision to exclude these areas from the surrounding County-wide PM_{2.5} nonattainment area is consistent with the designations we recently made for these same areas for the 8-hour ozone NAAQS.

Nine-Factor Analysis:
Southeastern San Diego
Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS

Factor 1: Emissions in areas potentially included versus excluded from the nonattainment area

The Campo, Cuyapaipe, La Posta, Manzanita tribal areas are designated as unclassifiable/attainment areas because their small size and eastern geographical position make them unlikely causes or recipients of San Diego area PM_{2.5} exceedances.

The tribal areas are small and have very low emissions; they are also in the southeastern corner of the county, generally downwind of areas with high observed annual PM_{2.5} levels. Therefore, they are not contributors to San Diego area PM_{2.5} exceedances.

Nor are the proposed tribal unclassifiable/attainment areas likely recipients of PM_{2.5} from the San Diego area. They are higher than the locations that experience high PM_{2.5}, and east of blocking mountain ranges.

Overall, PM_{2.5} formation is less well understood than ozone. In addition, since we are concerned here with the annual standard, one could not just examine a few extreme episodes, but instead must look at multiple conditions throughout the year. A fuller understanding may not be available until an attainment plan and modeling are developed. So, for purposes of determining the appropriate designation status for these tribal areas, this discussion will focus on the different potentials for pollutant transport to the areas during summer and winter.

When monthly average PM_{2.5} exceeds 15 $\mu\text{g}/\text{m}^3$, that month contributes to an annual average over 15, and hence to exceedances of the standard. While this can occur in May or June, concentrations exceed 15 more frequently and by a greater amount during the winter or wet season, roughly October through March. This is consistent with the expected enhancement of

PM2.5 levels during conditions of high humidity due to the sulfate formation in the aqueous phase.

As was described in EPA's designation for 8-hour ozone² page 34 (2004), summer temperature inversions, which restrict vertical dispersion and hence lead to high pollution levels, typically occur below or about equal to the elevation of Alpine, 2000 feet. This finding is based on meteorological modeling and analyses performed by the San Diego County Air Pollution Control District (APCD), as well as on ozone measurements that showed ozone confined to a layer at about this elevation. Unfortunately there is no PM2.5 data available from Alpine, but using similar reasoning as for ozone, this elevation limitation prevents significant transport of pollutants to the four tribal areas, which are 12 miles further inland, and range from 600 to 1300 feet higher. If a polluted layer were very thick, it could conceivably reach the lowest area, Campo #2, by way of the canyon containing Cottonwood Hauser Creek. However, the Campo areas are sheltered from the west by a westward spur of the Laguna Mountains, with accompanying complex terrain. Thus for the summer months, the tribal areas are unlikely to receive elevated PM2.5 levels.

For the winter months, when PM2.5 levels are higher, inversions occur more often at the surface than aloft, and tend to be less intense than in summer. The inversions aloft also tend to have a base at greater height above the ground, and so to be less constraining of pollutant dispersion.³ Surface-based inversions could hold pollutants near the ground. But in order for pollution generated in the more urban portions of San Diego County to reach the tribal areas, they must be transported far inland and uphill.

While winter winds are predominantly from the northwest, as in summer, they are slower. Under some conditions, flow can even be from the northeast, down the canyons instead of up, due to the Great Basin high pressure system that persists during winter (a strong version of this is the "Santa Ana" winds). Thus there is less tendency for pollution to be transported inland. Upslope flow that occurs due to surface heating could lead to pollutant transport uphill, but it is unlikely to extend to the tribal areas. The Great Basin high just mentioned would tend to weaken the upslope flow. In addition, in comparison to summer there is simply less heating to drive the flow. Finally, the position of the tribal areas essentially at the mountain range crest means that there is comparatively little slope to convert the expansion from heating into horizontal movement of polluted air upslope. Upslope flow from the east side of the range would also tend to retard upslope flow from the west. Therefore, during winter it is unlikely that elevated PM2.5 levels would reach these tribal areas.

One final piece of evidence to consider is the attaining air quality of Imperial County to the east. The nearest monitor east of the tribal areas is at El Centro, where the annual design value is 9.1 $\mu\text{g}/\text{m}^3$,⁴ well below the standard. While not completely conclusive due to the distance involved,

² U.S. EPA., "8-hour Ozone Designation, Technical Support Document", Chapter 3,

³ California Air Resources Board, "Climate of the San Diego Air Basin," December 1974.

⁴ U.S. EPA, Air Quality Subsystem (AQS), 2001-2003.

this reading is consistent with the idea that the mountain range central to San Diego County is a barrier to the movement PM_{2.5} from the urbanized western portion of the county, and that the tribal areas should not be part of the nonattainment area.

Factor 2: Air Quality in potentially included versus excluded areas:

To the west, the monitor nearest these tribal areas is El Cajon located approximately 30 miles west, which has a design value slightly above the PM_{2.5} NAAQS at 15.7 $\mu\text{g}/\text{m}^3$.⁵ To the east, the monitor nearest these tribal areas is El Centro located approximately 45 miles east, which has a design value well below the PM_{2.5} NAAQS, at 9.1 $\mu\text{g}/\text{m}^3$.⁶

EPA believes the air quality in these tribal areas attains the PM_{2.5} NAAQS because there are few sources in the area and it is separated from the violating monitors by both distance and topography.

The violating monitor at El Cajon is at approximately 435 feet elevation and is separated from these tribal areas by the Laguna Mountains. Between El Cajon and these tribal areas, the Laguna Mountains have elevations generally in the 3000-6000 foot range. The mountains nearest to the tribal areas are generally in the 4000-6000 foot range.

Factor 3: Population density and degree of urbanization including commercial development in included versus excluded areas

The tribal areas are not urbanized and are sparsely populated. Nearly all of the tribal lands discussed here have a population density of less than 50 persons per square mile. The maximum population density on these tribal lands is less than 500 persons per square mile, and even these areas account for only a negligible portion of the total tribal lands.

In addition to its sparse population, this area is at least 20 to 25 miles from areas with greater than 1000 persons per square mile.⁷

Factor 4: Traffic and commuting patterns

These tribal areas have little population and commuting data indicates that the average commuting time to work is 15-21 minutes. This data indicates that the average commuter from these tribal areas does not commute daily to the San Diego area.

This area includes rural portions of Interstate 8; however, there is little traffic on these portions of the highway compared to the San Diego area. Also, nearly all of this interstate is outside these tribal lands and thus out of tribal jurisdiction.⁸

⁵ AQS 2001-2003.

⁶ AQS 2001-2003.

⁷ U.S. Census, 2000.

Factor 5: Expected growth (including extent, pattern and rate of growth)

These areas are separated from the urbanized portions of San Diego County by distance and mountains. They are sparsely and lightly populated. There is no suburban or exurban growth on these tribal lands and there is a separation of 20 to 25 miles from these tribal areas to areas with population density of 1000 persons per square mile or greater. Because of this separation, expansion of the San Diego area and suburbs will not impact these areas in the near future. Because the population of these areas comprises such a small proportion of San Diego County as a whole, growth of these areas would account for only a negligible portion of the overall growth in San Diego County.⁹

Factor 6: Meteorology (weather/transport patterns)

[See discussion in Factor 1 for discussion of Meteorology (weather/transport patterns)]

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

These tribal areas are located 20 to 25 miles from the populated exurbs of San Diego. Within those 20 to 25 miles are the Laguna Mountains. The presence of these mountains separate these areas from the growing exurbs of the San Diego area. The elevations of the Laguna Mountains are generally 3000 to 6000 feet, with the higher peaks immediately adjacent to these tribal lands. These mountains form a barrier to air pollution and transport from the San Diego area to this region. These areas are not a significant source of emissions within the county, but due to their distance from the urbanized portions of San Diego County and the presence of the mountains between the two, any effect on the urbanized areas of the county from emissions generated by activities occurring on these tribal lands would be *de minimis*.

Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)

These tribal areas are outside the jurisdiction of the State of California and San Diego County.

Factor 9: Level of control of emissions sources

EPA does not believe that there are any sources of concern in these tribal areas. With no sources of concern, the level of control in this area is not currently relevant and does not affect PM_{2.5} in San Diego.

⁸ U.S. Census, "Profile of General Demographic Characteristics: 2000" (for Campo, Cuyapaipe, and Manzanita Reservations; profile not available for La Posta Reservation, 2000).

⁹ U.S. Census, 2000.

APPENDIX A

PM2.5 Design Values for San Diego and Imperial Counties

PM2.5 Design Values ¹⁰

note: all values are annual mean with units $\mu\text{g}/\text{m}^3$

San Diego County

AQS ID	LOCATION	ANNUAL MEAN 2001-03
06-073-1002	Escondido	15.9 $\mu\text{g}/\text{m}^3$
06-073-1007	San Diego-12th St.	15.9
06-073-0003	El Cajon	15.7
06-073-0001	Chula Vista	14.6
06-073-0006	San Diego-Overland	12.8

Imperial County

AQS ID	LOCATION	ANNUAL MEAN 2001-03
06-025-1003	El Centro	9.1
06-025-0005	Calexico	14.4 (incomplete data)
06-025-0003	Brawley	10.6 (incomplete data)

¹⁰ U.S. EPA, Air Quality Subsystem (AQS), 2001-2003

APPENDIX B

Description: Southeastern San Diego County Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS

List of Areas: Campo unclassifiable/attainment areas #1 and #2, Cuyapaipe unclassifiable/attainment area, La Posta unclassifiable/attainment areas #1 and #2, and Manzanita unclassifiable/attainment area.¹¹

[Note: Longitude coordinates listed are in degrees west; Latitude coordinates are in degrees north]

CAMPO Unclassifiable/attainment AREAS #1 AND #2

CAMPO Unclassifiable/attainment AREA #1

Degrees Longitude	Degrees Latitude
-116.3938522	32.6008873
-116.3938522	32.6021004
-116.3938370	32.6023903
-116.3938065	32.6084938
-116.3938217	32.6146011
-116.3938141	32.6168747
-116.3937836	32.6211510
-116.3938065	32.6246223
-116.3938141	32.6250572
-116.3938446	32.6293945
-116.3938599	32.6313171
-116.3938141	32.6434937
-116.3938370	32.6458054
-116.3938599	32.6528740
-116.3938599	32.6603432
-116.3938370	32.6705208
-116.3937683	32.6748314
-116.3937302	32.6833992
-116.3937073	32.6893730
-116.3891220	32.6893845

¹¹ The boundaries for these designated areas are based on coordinates of latitude and longitude derived from EPA Region 9's GIS database and are illustrated in a map entitled "Southeastern San Diego County Unclassifiable/Attainment Areas for the PM-2.5 NAAQS," included in the Technical Support Document for the 2004 PM_{2.5} Designations. The map and this set of coordinates are available at EPA's Region 9 Air Division office. The designated areas roughly approximate the boundaries of the reservations for these tribes, but their inclusion in this table is intended for Clean Air Act planning purposes only and is not intended to be a federal determination of the exact boundaries of the reservations. Also, the specific listing of these tribes in this table does not confer, deny, or withdraw Federal recognition of any of the tribes so listed nor any of the tribes not listed.

-116.3851318	32.6893387
-116.3819046	32.6893616
-116.3761826	32.6893501
-116.3758469	32.6892662
-116.3734131	32.6892815
-116.3683548	32.6892548
-116.3672028	32.6892776
-116.3624268	32.6892624
-116.3624496	32.6958275
-116.3625107	32.7037697
-116.3624420	32.7122650
-116.3623810	32.7183075
-116.3623810	32.7192383
-116.3623886	32.7198639
-116.3624191	32.7258682
-116.3624344	32.7294846
-116.3624420	32.7343102
-116.3610229	32.7343369
-116.3530502	32.7343521
-116.3438492	32.7343788
-116.3372269	32.7344055
-116.3266830	32.7344131
-116.3175354	32.7343712
-116.3093948	32.7343826
-116.3092957	32.7306824
-116.3092194	32.7265244
-116.3106918	32.7265053
-116.3115997	32.7265167
-116.3116150	32.7219543
-116.3116837	32.7182999
-116.3116531	32.7167130
-116.3116837	32.7110214
-116.3117752	32.7053833
-116.3117752	32.7037506
-116.3117981	32.6973648
-116.3118744	32.6903038
-116.3119049	32.6893005
-116.3183517	32.6893005
-116.3274918	32.6892776
-116.3325958	32.6892509
-116.3326569	32.6920052
-116.3326645	32.6923180
-116.3333893	32.6923409
-116.3339844	32.6923256
-116.3360519	32.6923256
-116.3398743	32.6923218

-116.3409500	32.6923447
-116.3409805	32.6901436
-116.3410263	32.6892700
-116.3452530	32.6892471
-116.3511810	32.6892128
-116.3511658	32.6824760
-116.3511353	32.6747093
-116.3511200	32.6681786
-116.3511276	32.6616478
-116.3511276	32.6602020
-116.3511276	32.6548462
-116.3511581	32.6485939
-116.3511963	32.6456985
-116.3512039	32.6400795
-116.3511963	32.6340599
-116.3511734	32.6310959
-116.3511658	32.6280823
-116.3511658	32.6251755
-116.3511658	32.6250687
-116.3511353	32.6204147
-116.3510742	32.6167946
-116.3511276	32.6139297
-116.3511353	32.6067390
-116.3511581	32.6043663
-116.3629379	32.6033897
-116.3682709	32.6029549
-116.3682632	32.6114883
-116.3682709	32.6169205
-116.3741760	32.6169586
-116.3758469	32.6170387
-116.3843842	32.6170082
-116.3852768	32.6169930
-116.3852615	32.6113052
-116.3852692	32.6029587
-116.3852692	32.6024170
-116.3852921	32.6020126
-116.3852997	32.6016350
-116.3921661	32.6010284
-116.3938522	32.6008873

EXCLUDING:

Degrees Longitude	Degrees Latitude
-116.3432693	32.6991501
-116.3452988	32.6991692
-116.3474503	32.6991806

-116.3474350	32.7004051
-116.3474579	32.7027702
-116.3497925	32.7027740
-116.3511810	32.7027893
-116.3514023	32.7027893
-116.3517685	32.7027740
-116.3517227	32.7033768
-116.3517151	32.7038116
-116.3517075	32.7044868
-116.3516922	32.7075272
-116.3516846	32.7100334
-116.3511581	32.7100220
-116.3496399	32.7100334
-116.3474045	32.7100410
-116.3474121	32.7089043
-116.3474197	32.7064056
-116.3431625	32.7063751
-116.3431473	32.7055168
-116.3431702	32.7037964
-116.3431931	32.7003136
-116.3432007	32.6993828
-116.3432693	32.6991501

CAMPO Unclassifiable/attainment AREA #2

Degrees Longitude	Degrees Latitude
-116.4757996	32.6338768
-116.4758072	32.6354027
-116.4758301	32.6374321
-116.4777145	32.6373940
-116.4801788	32.6373405
-116.4801559	32.6390724
-116.4801559	32.6419983
-116.4801559	32.6445580
-116.4801865	32.6460190
-116.4801788	32.6482124
-116.4778137	32.6482468
-116.4711609	32.6484070
-116.4685593	32.6484604
-116.4628830	32.6485977
-116.4628677	32.6481361
-116.4628983	32.6449471
-116.4628830	32.6435204
-116.4628677	32.6412926
-116.4610519	32.6413460
-116.4585495	32.6413803

-116.4585419	32.6399918
-116.4585495	32.6376915
-116.4623947	32.6376266
-116.4672012	32.6376038
-116.4671707	32.6364365
-116.4671631	32.6339645
-116.4698563	32.6339149
-116.4715118	32.6338959
-116.4757996	32.6338768

CUYAPAIPE Unclassifiable/attainment AREA

Degrees Longitude	Degrees Latitude
-116.3594589	32.8148613
-116.3758469	32.8149872
-116.3773727	32.8149681
-116.3773575	32.8186951
-116.3758545	32.8187332
-116.3730850	32.8187523
-116.3731766	32.8223953
-116.3758469	32.8224297
-116.3773727	32.8223877
-116.3945618	32.8223038
-116.3948517	32.8368340
-116.4123306	32.8367386
-116.4123688	32.8439903
-116.4124451	32.8530045
-116.4124527	32.8585320
-116.4125443	32.8618469
-116.4126282	32.8657188
-116.4084244	32.8657303
-116.4024582	32.8657722
-116.3950500	32.8658104
-116.3777466	32.8657455
-116.3774643	32.8585205
-116.3758469	32.8586006
-116.3601303	32.8584747
-116.3596268	32.8445740
-116.3596115	32.8438034
-116.3597107	32.8406830
-116.3598175	32.8368759
-116.3596649	32.8295746
-116.3594971	32.8182030
-116.3594589	32.8148613

EXCLUDING:

Degrees Longitude	Degrees Latitude
-116.3774490	32.8331528
-116.3817902	32.8331566
-116.3818512	32.8404427
-116.3775253	32.8404121
-116.3774490	32.8331528

LA POSTA Unclassifiable/attainment AREAS #1 AND #2

LA POSTA Unclassifiable/attainment AREA #1

Degrees Longitude	Degrees Latitude
-116.4124756	32.7194672
-116.4124603	32.7229614
-116.4124603	32.7262383
-116.4124680	32.7283859
-116.4124603	32.7296181
-116.4124451	32.7304344
-116.4123917	32.7310486
-116.4122467	32.7324371
-116.4121933	32.7330780
-116.4121475	32.7335663
-116.4121094	32.7337990
-116.4120789	32.7339172
-116.4119797	32.7340736
-116.4119339	32.7342529
-116.4119034	32.7344437
-116.4118958	32.7346458
-116.4119186	32.7357597
-116.4119110	32.7375832
-116.4073563	32.7376099
-116.4073334	32.7377701
-116.4073029	32.7429504
-116.4073029	32.7447739
-116.4031143	32.7447662
-116.4030533	32.7484016
-116.4019165	32.7483749
-116.4008408	32.7483826
-116.3992996	32.7483826
-116.3983383	32.7483864
-116.3969803	32.7483940
-116.3963089	32.7483864
-116.3946991	32.7483940
-116.3935699	32.7484093

-116.3924103	32.7484550
-116.3907318	32.7484818
-116.3884659	32.7485428
-116.3858948	32.7486076
-116.3828659	32.7486839
-116.3806458	32.7487526
-116.3797913	32.7487869
-116.3791351	32.7488022
-116.3774567	32.7488289
-116.3774719	32.7461090
-116.3758469	32.7461319
-116.3734589	32.7461510
-116.3734436	32.7488289
-116.3675156	32.7488518
-116.3610306	32.7488747
-116.3609924	32.7480240
-116.3610306	32.7452621
-116.3734741	32.7452507
-116.3734512	32.7415466
-116.3669434	32.7415543
-116.3609619	32.7415657
-116.3610306	32.7411308
-116.3610229	32.7343369
-116.3624496	32.7343407
-116.3624344	32.7294846
-116.3624191	32.7258682
-116.3623886	32.7198639
-116.3708572	32.7197227
-116.3758316	32.7196426
-116.3784943	32.7196579
-116.3839035	32.7196350
-116.3875351	32.7196198
-116.3911743	32.7196007
-116.3941879	32.7195473
-116.3970032	32.7195587
-116.3989334	32.7195625
-116.4012909	32.7195511
-116.4023514	32.7195320
-116.4040070	32.7195320
-116.4072418	32.7195053
-116.4124756	32.7194672

LA POSTA Unclassifiable/attainment AREA #2

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.4203491	32.7591209
-116.4203339	32.7655792
-116.4203262	32.7699738
-116.4160233	32.7700539
-116.4160538	32.7664719
-116.4117279	32.7666054
-116.4117584	32.7629204
-116.4117889	32.7593193
-116.4203491	32.7591209

MANZANITA Unclassifiable/attainment AREA

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.3610229	32.7343369
-116.3610306	32.7411308
-116.3609619	32.7415657
-116.3607101	32.7415619
-116.3605652	32.7415695
-116.3605957	32.7435303
-116.3606262	32.7452698
-116.3610306	32.7452621
-116.3609924	32.7480240
-116.3610306	32.7488747
-116.3610229	32.7496910
-116.3609543	32.7500534
-116.3608856	32.7587395
-116.3608704	32.7631874
-116.3608627	32.7672615
-116.3609009	32.7709351
-116.3564072	32.7709274
-116.3466721	32.7708702
-116.3436737	32.7708359
-116.3390884	32.7708054
-116.3270569	32.7707481
-116.3264618	32.7707291
-116.3184509	32.7708015
-116.3171158	32.7707672
-116.3171768	32.7670517
-116.3171997	32.7631454
-116.3172760	32.7569122
-116.3173828	32.7511406
-116.3173828	32.7501564

-116.3173828	32.7500610
-116.3174362	32.7489281
-116.3234787	32.7489281
-116.3266678	32.7488899
-116.3266449	32.7416649
-116.3266830	32.7344131
-116.3372269	32.7344055
-116.3438492	32.7343788
-116.3530502	32.7343521
-116.3610229	32.7343369

EXCLUDING:

Degrees <u>Longitude</u>	Degrees <u>Latitude</u>
-116.3388977	32.7581825
-116.3431778	32.7581978
-116.3431625	32.7613106
-116.3431625	32.7631645
-116.3431320	32.7654572
-116.3387756	32.7654266
-116.3346558	32.7654114
-116.3346634	32.7644844
-116.3346558	32.7631302
-116.3346634	32.7619247
-116.3346710	32.7581978
-116.3388977	32.758182

APPENDIX C

Map: Southeastern San Diego County Unclassifiable/Attainment Areas for the PM_{2.5} NAAQS

